The IRON AGE
May 7, 1959 A Chilton Publication The National Metalworking Weekly

Hotpoint's E. J. Kincaid—

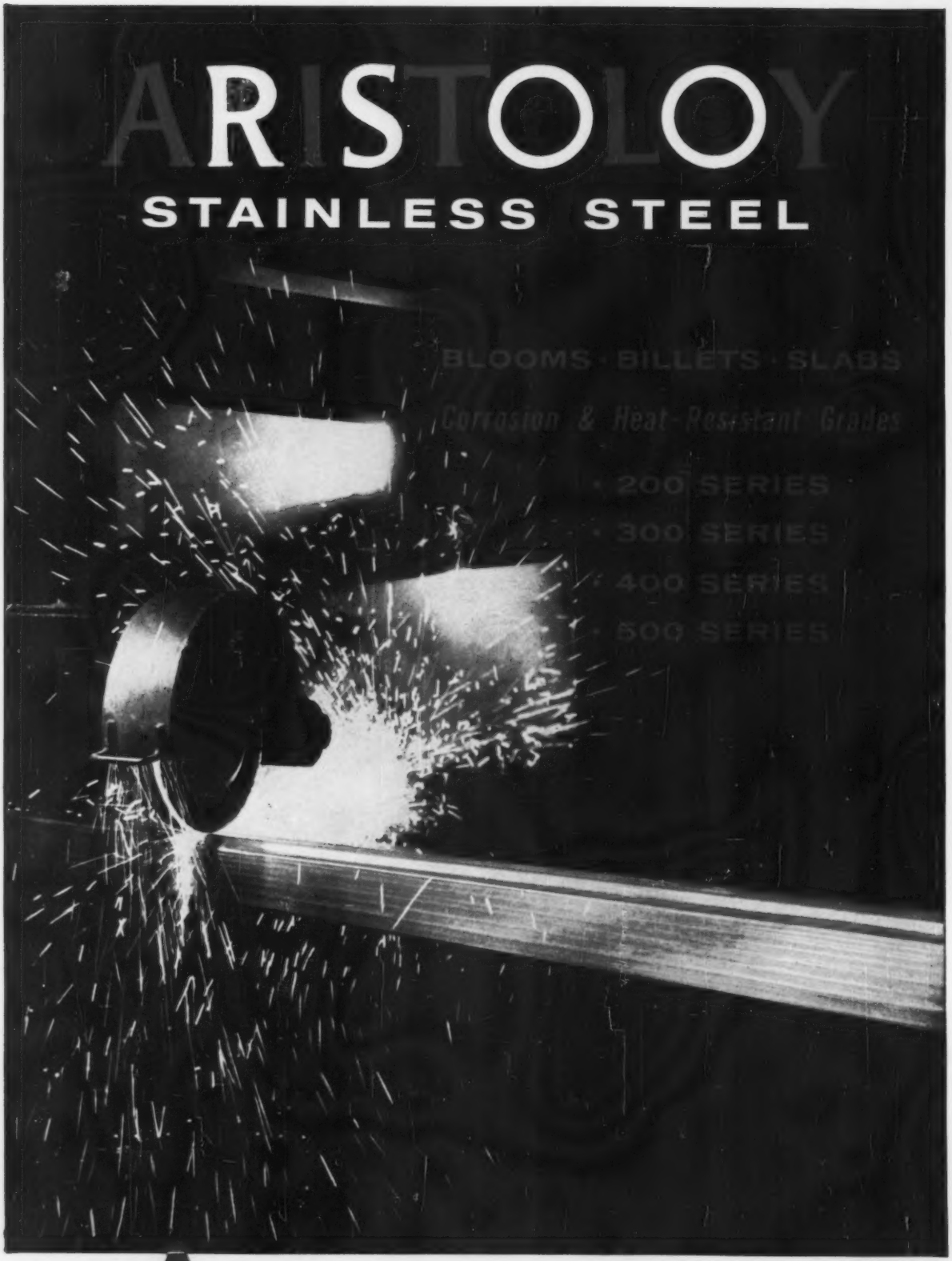
How Vendor Ratings Can Lower Inspection Costs P. 65

Why Industry Wants Renegotiation Changed – P. 53

New, Fast Method For Deburring Gears – P. 93

Digest of the Week – P. 2-3

ARISTOLOY
STAINLESS STEEL



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The IRON AGE

May 7, 1959—Vol. 183, No. 19

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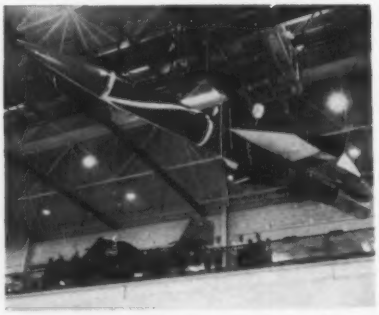
NEWS ARTICLES

RENEGOTIATION

Under Fire—Aircraft and missile makers were among those who told the government why industry wants



defense contract renegotiation ended. They testified the act perils defense, destroys incentive. P. 53

STEEL LABOR

Tough Days Ahead—Labor and management are digging in for a long, tough bargaining session. It appears certain there will be a strike this summer. P. 56

VACUUM MELTING

Moving Ahead—More companies are moving into the vacuum melting field. Capacity in U. S. is now more than 180 million lb. For the different vacuum processes, the market outlook is fluid. Missiles are taking up the slack caused by jet aircraft cutbacks. P. 58

KENNEDY LABOR BILL

It's in Trouble — House Labor Committee Chairman Barden is

Metalworking

◀ **VENDOR CERTIFICATION:** Developer of Hotpoint Range vendor certification program, E. J. Kincaid, left, checks, assembly operations with foreman Malone. This week's special report tells how the program works out, how it benefits vendor and buyer. P. 65

known to favor much stronger labor law than the Kennedy Bill. He may hold out for something better. P. 73

NEW WRITE-OFF RULES?

Need Is Cited—Realistic depreciation reforms are needed for U. S. industry if it is to compete in the brutal international market, a tool firm executive says. P. 77

FEATURE ARTICLE

GEAR DEBURRING

With Coated Abrasive—A new deburring machine does a thorough, low-cost deburring job on a wide range of gear types and sizes. Key to its success is a polishing and grinding wheel with hundreds of die-cut leaves of coated abrasive cloth. Wheel and workpiece rotate in timed relationship. P. 93

GRAPHITE FABRICS

A New Material—Organic textile fabrics can now be converted directly into flexible graphite cloth. The new material has excellent thermal and electrical conductivity. Being flexible, it's immune to thermal shock. With no melting point, the material sublimes at only at about 6600°F. P. 97

NEW OPENHEARTH PRACTICE

Combines Methods—In an effort to produce additional tonnage in existing equipment, a steelmaker has carefully examined its output potential. One new practice employs oxygen lances in new stationary furnaces. P. 98

AUTOMATIC PRESS

Reduces Tube Diameters — An automatic double-end tube reducer takes over a tough job of tapering both ends of a tube. The one unit does the job of three rotary swaging machines. P. 102

HIGH-SPEED GRINDING

On Miniature Parts — A new grinding system features a workholding method designed to speed tiny parts through a precision grinding cycle at low cost. Its high-speed grinding wheel reciprocates to remove right amount of metal. P. 104

MARKETS & PRICES

IRON ORE PINCH

May Be Coming—Stockpiles of iron ore are dropping fast. Blast furnace production in March hit a new record. While there is enough ore to go around now, a shortage is possible in the last half. P. 57

GALVANIZED SHEET

More in Autos—Automakers are exploring the use of galvanized steel in critical rust areas. There are some bugs to be ironed out, such as welding, paint adhesion, and sources of supply. P. 69

SWIMMING POOL MARKET

Growing Fast — Pool builders predict 70,000 new pools will go in this year—a 35 pct hike over last year. Metalworking is bound to do well in this market. P. 75

BUSINESS IS GOOD

Steel Record Possible — Steel production this year could exceed record output of 117 million tons set in 1955. First-half production is running between 125 and 130 million tons. P. 139

BUYING FOR PROFIT

Purchasing Wisely — Purchasing is not a substitute for a sale, but it can be expressed in terms of sales dollars. A dollar saved can be equal to $10 worth of sales. P. 140

NEXT WEEK

DESIGN ENGINEERING

Keep up With Changes—It's a matter of staying ahead of competition, keeping up with automation, being alert to new materials. Next week's Design Show features are slanted directly at the needs of today's design engineer.

New Bastian-Blessing handle (shown at right) is delivered by Chase Brass in multiple lengths, to avoid waste in cutting. (Note contrast with old handle.)

Ask Bastian-Blessing

How to get new product appeal and easier manufacture

Bastian-Blessing Company has for years made a complete line of welding torches. On one of their models they used a regular brass tube which was knurled during the manufacturing process. To increase the attractiveness of this torch and minimize production problems—they developed the idea of a fluted tube.

The customer wanted a mill-drawn surface which would need no further finishing—except scratch brushing. Flute spacing had to be kept regular; interior diameter had to hold vital concentricity. The Bastian-Blessing Company in cooperation with Chase Brass & Copper Co. was able to achieve their objectives:

- **Better style—more eye-appeal.**
- **A much more comfortable and easier-gripped handle.**
- **Improved machineability.**
- **A more rugged product than before.**

PLUS—costs kept in line with the old handle!

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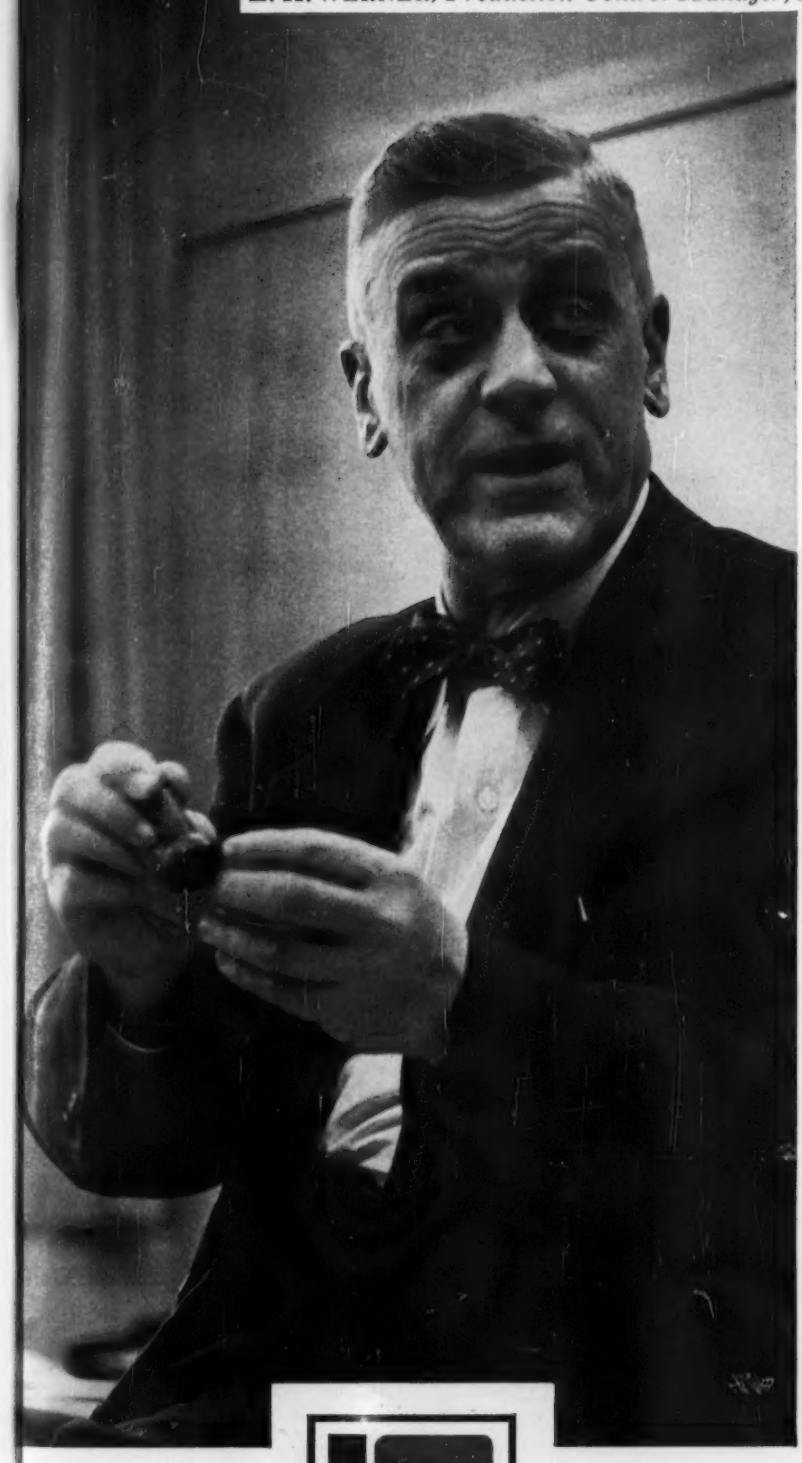
E. H. WERNER, *Production Control Manager, Lamson & Sessions, tells why...*



It's costly to be close-mouthed in ordering fasteners

THE more "specifics" you give us about your fastener needs, the more headaches and money we can save you. For example:

What quantity is required . . . and when? To give you economical production runs, using the most efficient tooling methods, we need specific information. Give us *realistic* quantities — how many must be shipped by a given time—what you expect future usage to be—delivery intervals required. This gives you maximum economy.

What are the physical requirements? Give us the "physicals" and let us recommend the suitable material. When prints specify a steel not commonly used, it must often be procured at a premium, which adds to your cost.

What are the critical dimensions? Close tolerances invariably add to cost. If you indicate which non-critical dimensions might be modified—radii, angles, fillets, lengths, outside and inside diameters, concentricity, etc.—we can often eliminate expensive secondary operations.

What quality level is required? This determines whether 100% inspection is necessary, sample inspection is adequate, or only certain dimensions must be inspected.

Take advantage of the specialized experience and facilities available to you through L & S, to save money and headaches on fastener buying.

L & S Fastener Engineering helps you "tighten up" on...

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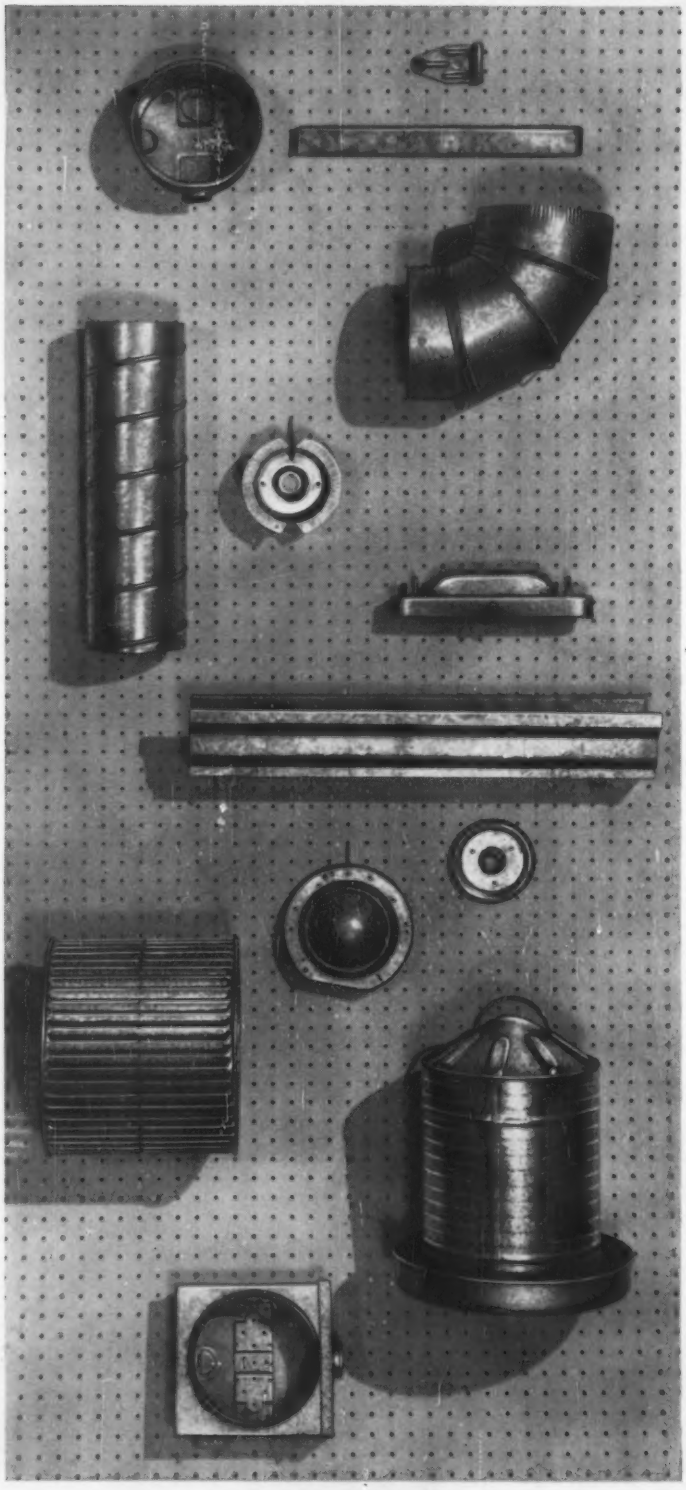
For more information about workable, zinc-protected Armco ZINCGRIP® Steel, just fill in and mail the coupon.



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American Fair Play What's Happening to It?

We seldom use this space to write about individuals. There are so many other "must" subjects that we usually don't have the space.

But this time it's different. Two men have been so shabbily treated that we must call attention to the childishness—and the meanness—of certain Senators. How they can hold up their heads without a flush of shame is more than we can understand.

Take Mr. Lewis L. Strauss, Commerce Secretary. For more than 100 days he has been waiting to be confirmed by the Senate. But he is being punished. He is on the rack because he offended Senators in the Dixon Yates case.

There are others in the back room who never forgave him for leading the fight to deprive physicist Dr. Robert Oppenheimer of his "E" clearance, thus barring him from classified work.

There isn't a more loyal and sincere American in government service today than Lewis L. Strauss. He has sacrificed time, money, energy and health to carry out jobs the President has assigned to him. He stands by principles. At times he may seem arbitrary, but the truth is that he searches the facts, probes reasons of the heart and brutally checks himself and his reactions before he comes to his conclusions.

Another man who has been given the "treatment" by some Senators is U. S. Steel's Roger M. Blough. We will skip the beating he took in August 1957 when his Senate committee appearance rivaled the Spanish Inquisition. Let's take week before last at Washington. It was one of the worst lashings ever handed an individual of such high standing in the industrial community.

Ostensibly he was called to testify about an outlandish bill to control prices by threat and publicity. But what Senators O'Mahoney and Kefauver did to him was hardly what lawyers call material, competent, and relevant: It was a travesty on human justice. To be frank, he was all but called a dictator and if not a dictator, then a person whose actions were suspect.

Yet in industry there isn't a man who takes his moral responsibilities to his company, to his country, and to himself more seriously than does Roger Blough. He is honest, stubborn on principles, and a most reasonable man. Yet because he is wise to political hypocrisy and recognizes a phoney when he sees it—and says so—he is "safely" slandered.

Where is our vaunted American fair play?

Tom Campbell

Editor-in-Chief

new, cost-reducing chemical for ACID PICKLING BATHS

AMCHEM SERSEAL* reduces heating requirements up to 70%, improves working conditions!

BEFORE SERSEAL, steam vapors and fumes escape from the bath, making working conditions unpleasant, lowering morale.

SERSEAL HAS BLANKETED THE BATH in just 10 seconds. All steam, corrosive fumes and vapors are contained within bath.

Put these 7 important Serseal advantages to work for you!...

1 Save up to 70% in heating costs.

2 Improve working conditions both from a comfort and health standpoint. Steam, heat, fumes and vapors are contained within the bath.

3 Cut warmup time. The blanket prevents heat loss.

4 Less corrosion of surrounding equipment. Corrosive fumes are retained in the bath.

5 Reduce the cost for heating elements.

6 Less exhaust equipment required. Since the bath is sealed, there is little escape of fumes and vapors. And in many cases, ventilating systems can be safely eliminated.

7 Now proving its economy, efficiency and overall satisfaction in many customer plants.

Write today for complete information about this important new cost-reducing, work-saving chemical blanket for acid pickling baths! Address Ambler 50, Pa.

AMCHEM

*Patent applied for **SERSEAL**

Amchem Serseal is another chemical development of **Amchem Products, Inc.** (Formerly American Chemical Paint Co.) **AMBLER 26, PA.** • Detroit, Mich. • St. Joseph, Mo. • Niles, Calif. • Windsor, Ont. • Amchem is a registered trademark of Amchem Products, Inc.

Automation Is Competitive

Despite high development and capital costs, automatic assembly machines are proving successful in overcoming the competitive handicap of rising labor costs. One maker of spark plugs reports it can turn out 2600 units per hour with one machine operator. Before it took 21 men on a line to turn out 5000 units per hour.

Get Quality in Ferroalloy

Ferroalloy quality control is receiving new attention. Steelmakers are finding that even very small amounts of tramp material can have very serious effects on some steels. At least one major steelmaker is about to warn suppliers to meet higher standards and tougher inspection procedures.

Sulfur for Machinability

Additions of 0.07 to 0.21 pct sulfur have a beneficial effect on the machinability of Type 202 stainless steels, according to recent findings. Evaluation was run with drill-penetration and lathe-machining tests on wrought material. The sulfur additions produced little difference in hot ductility at 2200° and 2400°F. There was no noticeable effect on strain resistance in a 20-pct salt spray atmosphere.

Future for Thermoelectricity

A long term research program is beginning to see promise in finding the right materials for practical thermoelectric devices. The direct conversion process works both ways: for converting heat to electricity and for putting electrical energy to work for direct refrigeration as well as heating.

Aid for Small Business

Small companies need help from the government if they're going to get more defense subcontracts. Two actions might help, small-business experts tell Congress: First, more advertised competitive bidding by the Pentagon for prime contracts, rather than more negotiated bidding, as proposed in some pending legislation. Secondly, less "weapons system" type procurement, where prime contractors are responsible for an entire missile, ship or plane.

Decementing Solution

Seen as an attractive alternative to shot-blasting and manual cleaning, a chemical solution removes cement and solidified aggregate from iron and steel. Parts need no washing after immersion. The solution can be used in any acid-resisting container.

Preventive Maintenance

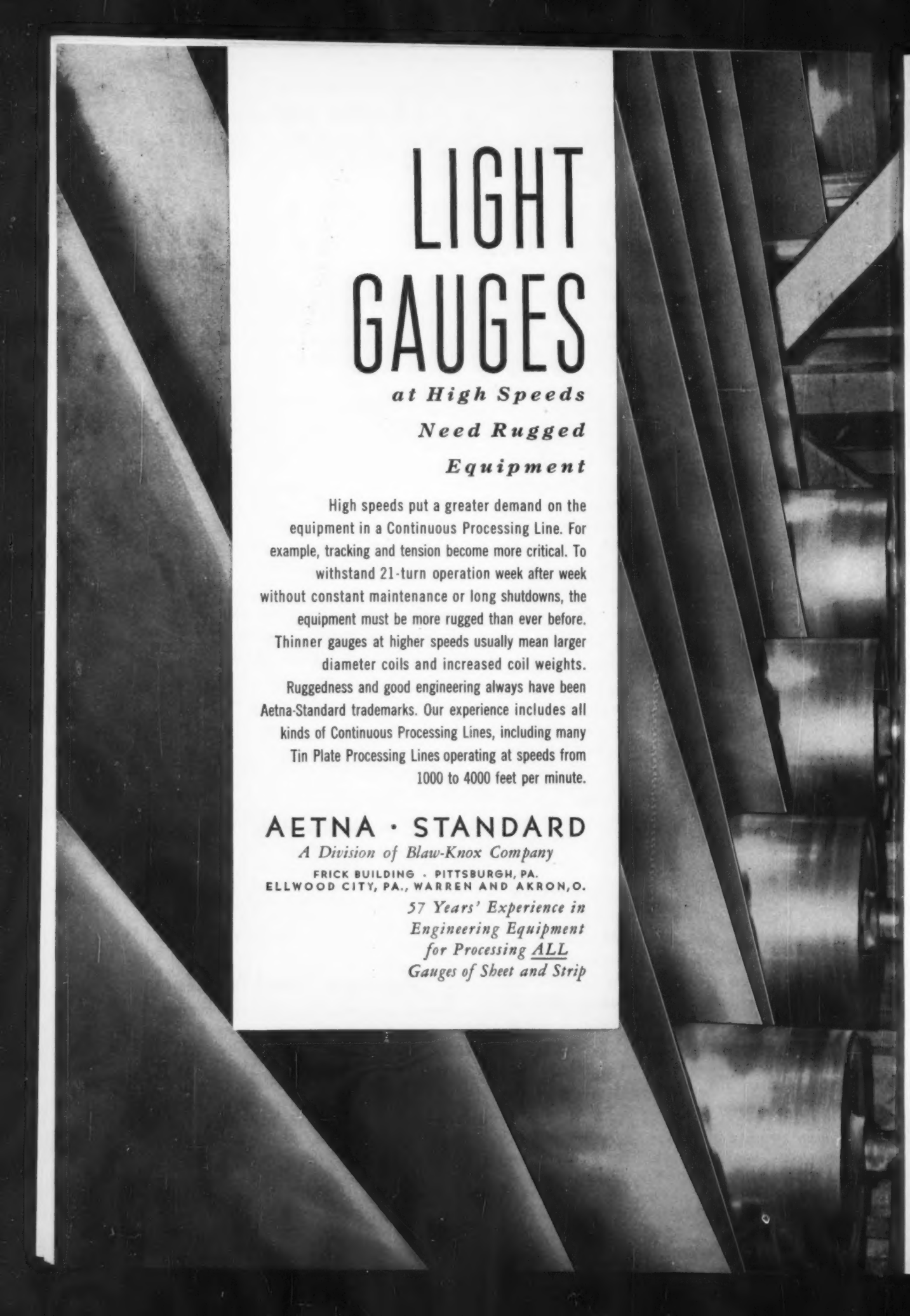
More automation means more maintenance problems, a machinery hydraulic conference was told last week. Industry is spending nearly 11 billion dollars for maintenance, not counting loss in production, but where installed, simple, practical preventive maintenance programs eliminate breakdowns.

Disappointment for Unions

Unions fume over what they call "poor results" from this year's Congress. Some union lobbyists are tartly reminding senators and representatives of labor's cash contribution last year. Some not-very-subtle nudging from the AFL-CIO hierarchy is aimed at getting federal dollars for distressed areas, more public works projects. It's been a disappointing year for unions in Washington.

Stainless Steel Mufflers

Now being tested in a variety of automobiles throughout the country, stainless steel mufflers may mean a lifetime muffler for your car. Test surveys reveal that it's the short-run, stop-and-start driving that is hardest on mufflers. In this type of driving, corrosive condensates quickly rust out standard muffler materials. Of the three types of stainless tested—430, 304 and 310—, none has shown any evidence of liquid or vapor phase corrosion.



LIGHT GAUGES

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High speeds put a greater demand on the equipment in a Continuous Processing Line. For example, tracking and tension become more critical. To withstand 21-turn operation week after week without constant maintenance or long shutdowns, the equipment must be more rugged than ever before. Thinner gauges at higher speeds usually mean larger diameter coils and increased coil weights. Ruggedness and good engineering always have been Aetna-Standard trademarks. Our experience includes all kinds of Continuous Processing Lines, including many Tin Plate Processing Lines operating at speeds from 1000 to 4000 feet per minute.

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Vote for Courage

Sir — The editorial "Industrial Frustrations, Don't Let Them Get You Down" (Apr. 16 issue) expresses conditions that not only apply to industry but the individuals who make up industry. It is an excellent composition.

The principles of integrity, thrift, and honesty—may they never be lost.

Please send me at least ten copies of this editorial.—E. W. Schoen, Chief Metallurgist, Huck Mfg. Co., Detroit.

▪ A few reprints are still to be had for the asking.—Ed.

Warm Applause

Sir—In working up a schedule for our client, Keystone Drawn Steel Company, Mr. Willard N. Lynch, Jr., president of that company, expressed admiration for the editorials which you have been running in your publication.

He asked me to find out whether you have published these in book form or whether it would be possible to obtain a collection of your editorials for the past year or so. —H. Sloane, President, Advertising Associates of Philadelphia, Inc., Phila.

▪ Sorry to say we have not published Tom Campbell's editorials in booklet form. However, we are sending you a collection of some printed in recent months.—Ed.

More Applause

Sir—I wish to compliment your magazine for the very excellent job you do in covering not only the iron and steel industry, but also for the job you do in covering items of general business interest.

I find that reading your magazine every week keeps me well posted on the significant happenings and new thinking in industry generally.

The annual financial analysis of the steel industry is excellent, and I should like to have two copies of it.—E. H. Watkins, Division Buyer, United States Gypsum Co., Chicago.

Kaiser Linepipe

Sir—In your Apr. 9 edition, you ran a story entitled, "Behind the Linepipe Sales Comeback." The story contained a table listing locations and capacities of the various linepipe producers in the U. S.

The information regarding our pipe facilities at Napa and Fontana, California, was considerably out-of-date.

In the chart you stated at Napa, Calif. our Napa-Fontana Fabricating Div had an estimated annual linepipe capacity of 280,000 tons in sizes from 20 to 30 in. OD. Actually Kaiser Steel's linepipe facilities are located at Fontana and Napa. We have estimated capacity of 600,000 tons a year in a size range of 4½ to 36 in. OD.—H. H. Hance, Advertising Manager, Kaiser Steel Corp., Oakland, Calif.

"What does 'put it on the back burner and let it cook awhile' mean?"

In a recent nation wide survey of honeycomb section manufacturers by an independent research organization, 75% of the responders indicated that uniform thickness of the thin metal core material was the most important factor demanded of suppliers.

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Gates brings you, through *Specialized* Research in V-Belts, another important cost-saving advance:

Now — at no increase in price — the horsepower rating of Gates Vulco Ropes has been increased 40%.

As replacements on standard drives, these V-Belts with 40% more load carrying ability will give longer service. Longer life reduces down-time, and cuts belt replacement costs.

And as the tag tells you: Belts labeled "Gates Vulco Rope" or "Gates Hi-Power" are identical in construction and can be used interchangeably in matched sets.

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Today, all Vulco Ropes in Gates distributor and warehouse stocks have the new higher horsepower rating.

See the Yellow Pages of your phone book for your nearest Gates V-Belt distributor.

Designing NEW Drives?

For new drives, Gates now offers you the *new Super HC V-Belts and Sheaves* — the most advanced concept in power transmission in 25 years. The Super HC Drive is far more compact... takes up to 50% less space. Costs less, too. You save as much as 20% over present V-Belt drives. Ask your nearby Gates distributor for Handbook DH-900 entitled, "The Modern Way to Design V-Belt Drives."

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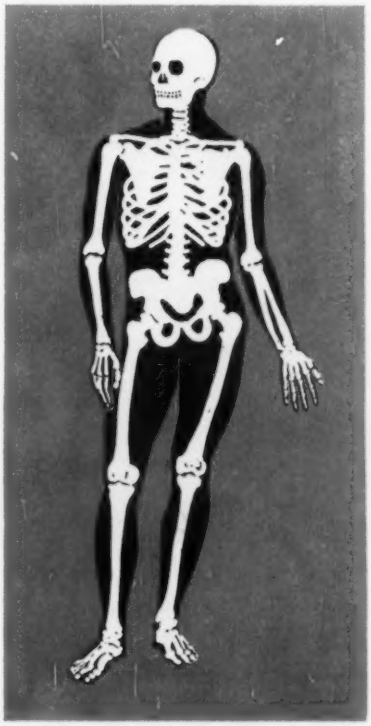
Master Mind

During a recent speech W. C. Christensen, director, Bureau of Apprenticeship and Training, U. S. Department of Labor, gave this interesting account of why man will never be obsolete—no matter how "smart" we make our machines:

"Here is a secret X-ray view of our yet unsurpassed thinking machine (see drawing). It's a very ancient model, as old as time. No pushbuttons, no bells. But we've found that if you feed it facts and figures, coffee and a sandwich, and leave it alone for a while, there's no limit to what it can do.



"It is built to move at three miles an hour, to see and hear at a few hundred yards, to react in large fractions of a second, to live in an oxygen atmosphere.

"When it must fly in extreme temperatures and pressures at speeds faster than sound, make decisions in thousandths of a second, bomb unseen targets, shoot down enemy invaders in zero - zero weather, or sink submerged submarines, it must have the aid of mechanical and electronic senses, muscles and nerves.

"But this is the thinking machine that produces the mechanized model. This is the thinking machine that operates the mechanized model. This is the thinking machine that maintains the mechanized model.

"And this is the only thinking machine whose mental capabilities have not as yet been fully explored. This is the only thinking machine that can make a decision on its own. This thinking machine must be trained."

Word from the Henhouse

Chalk up another first for stainless steel! Latest application: Blinders for chickens. Seems the new "Chiklip" blinders, made by Able Metal Co. from Allegheny Ludlum stainless steel wire, stops cannibalism and feather-picking in the henhouse.

One person can put on the blinders quickly and easily, says A-L. What's more, they can be applied ten times as fast as other blinders, are lightweight, flexible, cannot corrode, have an extra tension spring, and no bridge to collect wet mash and clog nostrils.

All well and good, A-L, but how does this steel help the chickens "widen their world"?

Largest Ever

What's the biggest check ever drawn? Well, according to the United Effort, published by United Engineering and Foundry Co., it was for $7.5 billion. Purpose? To transfer funds from one United States Treasury account to another.

IT'S THE FINISH THAT COUNTS

IN TUBING TOO!

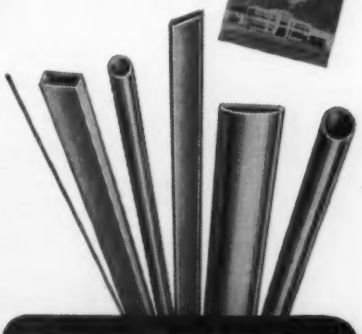
TESTS PROVE PRECISION FINISH UNSURPASSED

Shape, size, alloy are important in tubing and Precision Tubing excels in all . . . but finish is an outstanding quality of Precision Tubing where specified . . . and at no extra cost.

Precision Tubing is available in clean, scratch-free finishes suitable for anodizing or plating to mirror finishes. In sizes from .010" to 1.125" O.D. in copper, brass, aluminum, up to ⅝" O.D. in nickel and nickel alloys.

Other Precision Tubing is available in straight lengths, coils, preformed to specified shapes . . . and also as Coaxitube the metal shielded coaxial conductor. Whatever your designs or requirements for fine accurate tubing at regular tube prices order Precision Tubing. Write for complete technical data to Dept. 10, Precision Tube Company, Inc., North Wales, Pa.

GET THIS NEW TUBING DATA CATALOG . . . FREE!



PRECISION TUBE COMPANY

...where industrial progress is cast in steel

Accurate measurement of ingredients and periodic analysis insure the correct chemistry for the many different alloys produced at General Steel.

METALLURGICAL SERVICE... EXPERT ANALYSIS AND COUNSEL

Write for folder: **How General Steel Castings Can Improve Product Design and Performance.** General Steel Castings, Station 201 Granite City, Illinois.

Optimum design in cast steel structures for your products can be gained only through application of a *complete* range of services. One of these is our metallurgical service consisting of expert counsel and accurate control of steel analysis... another area in which General Steel is well equipped and staffed.

This expert metallurgical counsel and the facilities of each of our laboratories are available for solving metallurgical problems for customers.

A vast backlog of knowledge and experience is available to you. Let us work with you from the "raw-idea" stage... in this way you benefit from our complete services from creative analysis and engineering to follow-through of performance in the field.

GENERAL STEEL CASTINGS

GRANITE CITY, ILL. · EDDYSTONE, PA. · AVONMORE, PA.

COMING EXHIBITS

Coal Show — May 11-14, Public Auditorium, Cleveland. (American Mining Congress, 1200 18th St., N. W., Washington 6, D. C.)

Design Engineering Show — May 25-28, Convention Hall, Philadelphia. (Clapp & Poliak, Inc., 341 Madison Ave., New York 17.)

Material Handling Show—June 9-12, Public Auditorium, Cleveland. (Hanson & Shea, Inc., One Gateway Center, Pittsburgh 22.)

Industrial Finishing Show — June 15-19, Detroit Artillery Armory, Detroit. (Information: H. J. McAleer, 3171 Bellevue, Detroit 7, Mich.)

Instrumentation Show — Sept. 21-25, International Amphitheatre, Chicago. (Instrument Society of America, 313 Sixth Ave., Pittsburgh 22.)

Metal Show — Nov. 2-6, International Amphitheatre, Chicago. (American Society for Metals, 7301 Euclid Ave., Cleveland 3.)

MEETINGS

MAY

Industrial Diamond Assn. of America, Inc.—Annual meeting and convention, May 11-14, Williamsburg Inn, Williamsburg, Va. Association headquarters, P. O. Box 175, Pompton Plains, N. J.

Porcelain Enamel Institute — Mid-year conference, May 13-14, Edgewater Beach Hotel, Chicago. Institute headquarters, 1145 19th St., N. W., Washington, D. C.

American Supply & Machinery Mfrs. Assn., Inc.—Annual triple industrial supply convention, May 13-15, Dallas, Texas. Association headquarters, 2130 Keith Bldg., Cleveland.

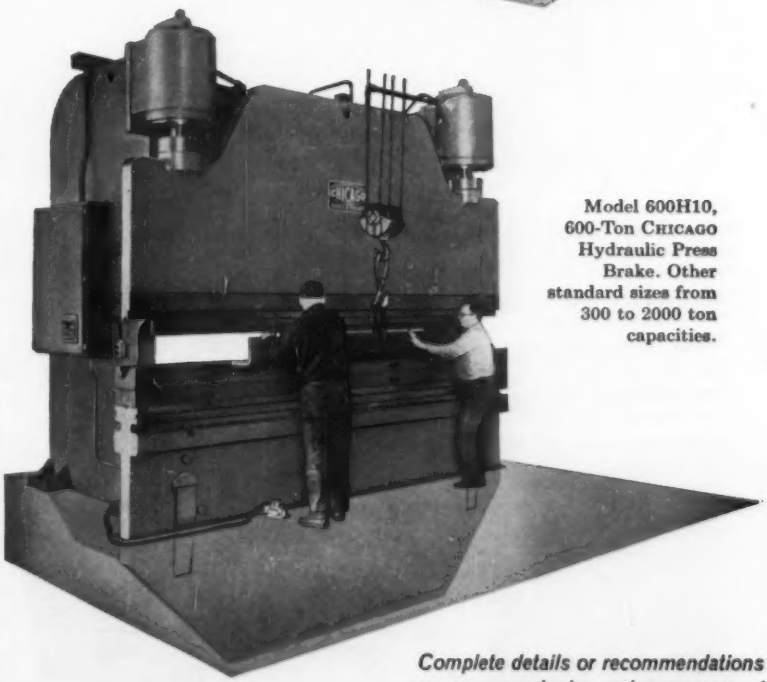
Machinery Dealers National Assn.—Annual convention, May 13-15, Plaza Hotel, New York. Associa-

(Continued on P. 16)

CHICAGO® PRESS BRAKES

unexcelled accuracy / ***for sheet metal and plate work***

Model 410D, 90-Ton CHICAGO Mechanical Press Brake. Other standard sizes from 11 to 450 ton capacities.



Model 600H10, 600-Ton CHICAGO Hydraulic Press Brake. Other standard sizes from 300 to 2000 ton capacities.

Complete details or recommendations on any press brake work upon request

8430

Press Brakes
Press Brake Dies
Straight-Side-Type Presses
Hand and Power Bending Brakes
Special Forming Machines

CHICAGO DREIS & KRUMP

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GEAR PROBLEMS?

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GEAR PERFORMANCE to match the ever-increasing power and speed of modern machines is a Fairfield specialty. This is possible because Fairfield has long held a position of leadership in utilizing the most advanced methods, equipment, and techniques for producing better gears. By keeping apace with modern engineering trends, Fairfield renders an invaluable service to many of the nation's leading machinery builders.

If you have a gear problem, check with Fairfield. Our engineers are well-qualified to give you expert recommendations. CALL OR WRITE.

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HERRINGBONE—(Fellows Type). Sizes from 1½" to 15"

SPIRAL BEVEL—Sizes from 16 pitch, 1½" dia., to 1½ pitch, 28" dia.

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HYPOID—Sizes from 1½" to 28" dia.

ZEROL—Sizes from 16 pitch, 1½" dia., to 1½ pitch, 21" dia.

WORMS AND WORM GEARS—Worms to 7" dia. Worm gears to 36" dia.

SPLINED SHAFTS—Lengths to 72".

DIFFERENTIALS—3,000 to 500,000 inch pounds capacity.

Note: All of the sizes above are approximate.

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Gears and Differentials Made to Order for:

TRACTORS • HEAVY DUTY TRUCKS • AGRICULTURAL MACHINERY • POWER SHOVELS AND CRANES
MINING MACHINES • ROAD GRADERS • BUSES • STREET SWEEPERS • INDUSTRIAL LIFT TRUCKS

EXHIBITS, MEETINGS

(Continued from P. 15)

tion headquarters, 1346 Connecticut Ave., N. W., Washington 6, D. C.

American Institute of Chemical Engineers—National meeting, May 17-20, Muehlebach Hotel, Kansas City, Mo. Institute headquarters, 25 W. 45th St., New York.

Industrial Heating Equipment Assn., Inc.—Annual spring meeting, May 17-20, The Homestead, Hot Springs, Va. Association headquarters, 1145 19th St., N. W., Washington 6, D. C.

The Magnesium Assn. — Annual meeting, May 17-20, Sea Island, Ga. Association headquarters, 122 E. 42nd St., New York.

Aluminum Wares Assn. — Annual meeting, May 18-19, The Greenbrier Hotel, White Sulphur Springs, W. Va. Association headquarters, 1806 First National Bank Bldg., Pittsburgh.

Electronic Industries Assn. — Annual convention, May 20-22, Sheraton Hotel, Chicago. Association headquarters, 1721 DeSales St., N. W., Washington 6, D. C.

Aircraft Industries Assn. of America — Semi-annual meeting, May 20-22, Williamsburg Inn, Williamsburg, Va. Association headquarters, 610 Shoreham Bldg., Washington 5, D. C.

Anti-Friction Bearing Manufacturers Assn., Inc. — Semi-annual meeting, May 20-22, Edgewater Beach Hotel, Chicago. Association headquarters, 60 E. 42nd St., New York.

Industrial Wire Cloth Institute—Annual resort meeting, May 23-26, The Greenbrier Hotel, White Sulphur Springs, W. Va. Institute headquarters, 75 West St., New York.

Malleable Founders' Society—Annual meeting, May 25-26, The Homestead, Hot Springs, Va. Society headquarters, 1800 Union Commerce Bldg., Cleveland.

Continuous Electrolytic Cleaning Line, Indiana Harbor Works, Inland Steel Company

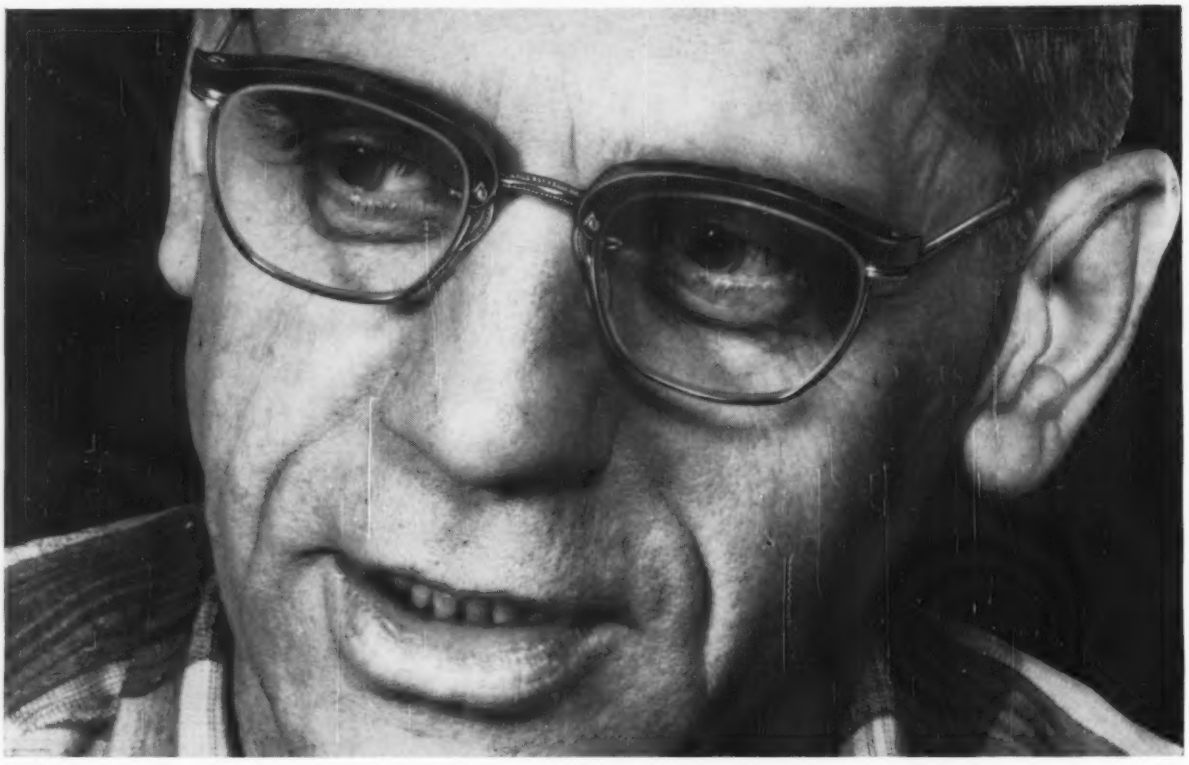
Wean, Inland and Cleaning . . .

Operating at speeds up to 2500 fpm, this Wean tension-type, electrolytic cleaning line has replaced two older washer lines at the Indiana Harbor Works of Inland Steel. It employs grid-to-grid application of electrolytic current to the strip for efficient removal of oil and residue resulting from cold reduction. The line handles coils 18″ to 42″ in width and weighing up to 40,000 pounds.

Of all electrolytic cleaning lines in use today, 80% have been built by Wean, leader in the design and construction of all types of coil processing lines. If you are planning to expand or modernize your sheet, strip, or tin plate finishing facilities, Wean's *creative engineering* can mean important savings to you.

THE WEAN ENGINEERING COMPANY, INC. • WARREN • OHIO

Here's Eye Protection and Correction (℞) in 3 Eye Appealing Series



How (℞) Safety Glasses like these Can Pay for Themselves in Six Months

These are the modern types of safety prescription glasses that workers wear willingly. Combining smart appearance with SAFETY STANDARD FRAMES AND LENSES, they provide the basic ingredients for an ℞ program. By guarding against accidents they save eyes—and compensation in four and five figures. In indirect costs, they save about four times as much as in direct costs. In many cases, they pay for themselves in 6 months or less. Specify them for Safety Prescription. Your workers deserve the best!

"SAFEMASTER" is American Optical's latest. Virile good looks! Frame is high quality nickel. Trim is durable nonflammable plastic — minimizes glare-reflection. Every frame must pass *3* National Bureau of Standards tests (Cat. No. F5200).

"2-TONE." Another handsome, late model addition to AO's line of Ultrascopic safety glasses. Onyx on crystal acetate (Cat. No. F9700).

Ultrascopic in Pink Crystal or our very new Mahogany frame. (Cat. Nos. F9500—Pink Crystal, F9500M—Mahogany).

YOUR NEAREST AO SAFETY PRODUCTS REPRESENTATIVE CAN SUPPLY YOU

NOTE: Your Safety Director has full particulars on these safety glasses. He knows there is no substitute for quality in safety. Look to him!

American Optical COMPANY
SAFETY PRODUCTS DIVISION

Always insist on the AO Trademark on lenses and frames.
Safety Service Centers in Principal Cities

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CONTINUOUS-LINE

GALVANIZING

Gives You Even More In COILS

Yes, you get the basic advantages of continuous-line galvanized sheet metal:

A CORROSION-RESISTANT ZINC COATING AS DUCTILE AS THE STEEL BASE

You can

But you can't **FLAKE IT** **CHIP IT** **PEEL IT** **CRACK IT**

AND THE DIVIDEND

In Coil Form, you

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- **ELIMINATE SHEET END TRIMMING**
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Exit end of continuous galvanizing line

The St. Joseph Lead Company is in the unique position of being able to supply zinc to virtually any specification which operators of continuous galvanizing lines consider most desirable for their individual requirements.

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ZN-127

In Harbison-Walker Refractories . . .

Uniformity means

CONTROL OF QUALITY IN RAW MATERIALS—Representatives of Mining Department and Control Engineer examining lumps of flint clay after test firing. On the basis of this and other preliminary tests, clays are blended to obtain mixtures having desired properties.

CONTROL IN RAW MATERIALS PREPARATION—Screen analyses of brick mixtures keep the proportions of the various size fractions within predetermined limits. This correct proportioning is important to uniform performance of the refractory.

Leadership in refractories through constant research

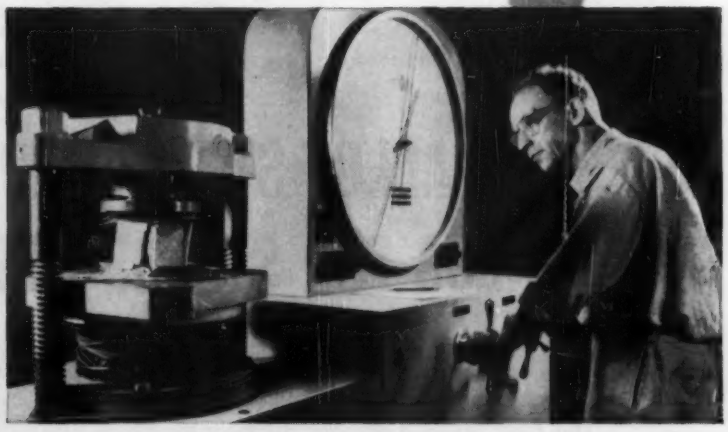
Consistent Performance

The dependable uniformity and high quality of Harbison-Walker refractories assures predictable and consistent performance and permits users to plan furnace campaigns with confidence. Through a highly developed system of Quality Control, Harbison-Walker is able to compensate for normal variations and to produce refractories having the highest degree of uniformity in quality and workmanship so important to satisfactory performance.

The results are: better furnace operation, fewer interruptions, lower maintenance costs.

Control testing begins with the raw material still in the ground, follows through each stage of mining, processing and manufacturing, and ends only when the finished products are loaded on cars or trucks for shipments to the user.

CONTROL IN MANUFACTURE—Batching and mixing, pressing and forming and drying and firing—all important steps in manufacture—are constantly checked. Periodically, a supervisor weighs and measures samples of the brick being made. By means of control charts, acceptable limits, both upper and lower, can be closely maintained.



PRODUCT TESTING—Tests are made continuously on samples of finished refractories to make sure that they meet the Harbison-Walker standards. These include crushing strength (shown here), resistance to abrasion, high temperature characteristics and other physical properties.

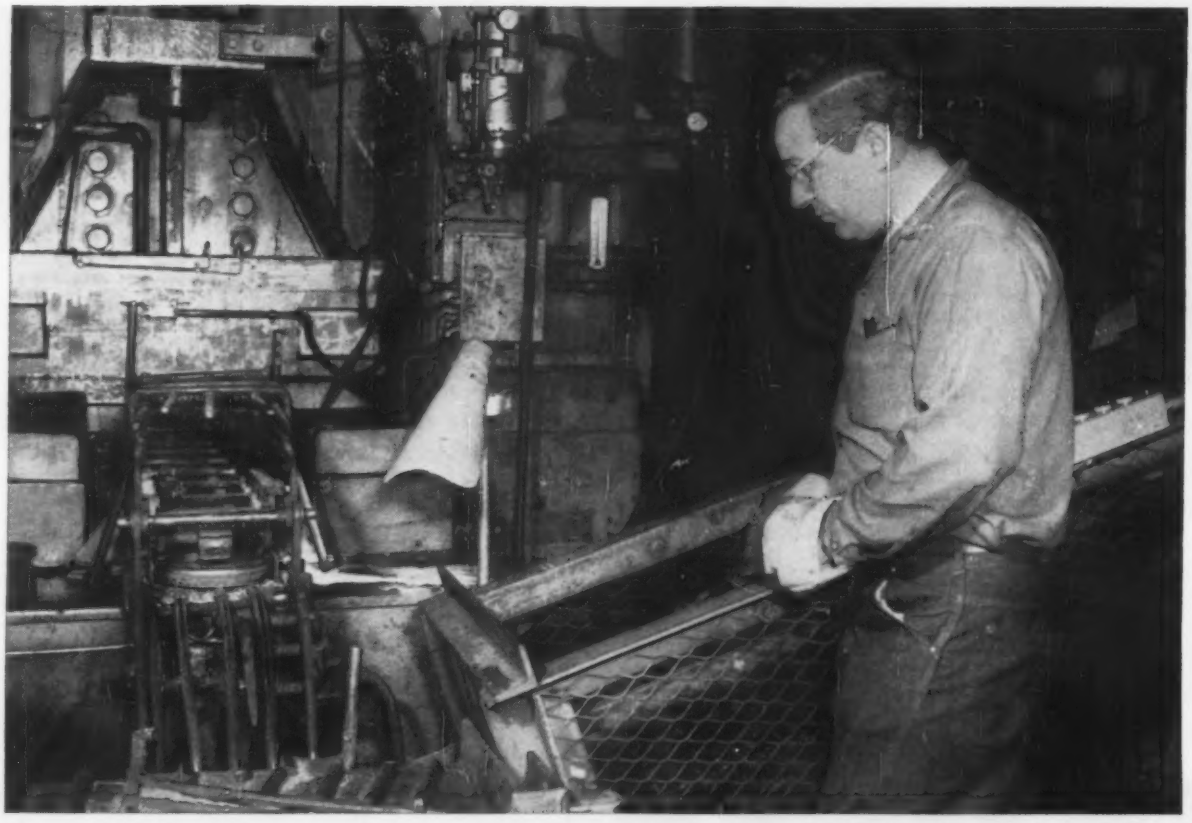
HARBISON-WALKER REFRACTORIES COMPANY

AND SUBSIDIARIES

World's Most Complete Refractories Service

GENERAL OFFICES • PITTSBURGH 22, PENNA.

Problem-Solving Products from Republic:



Alloy steel billets, four inches square, are fed into a seven-step forging press and emerge at the end as differential ring gear blanks.

REPUBLIC ALLOY STEELS PROVIDE STRENGTH AND TOUGHNESS FOR STRESS-RESISTANT RING GEARS

Fast starts and steep hills require tough, strong, dependable ring gears.

The Ford Motor Company, to maintain its reputation for quality, specifies only the finest steels. Ford uses Republic SAE 4028H series hot rolled Alloy Steel in forging the highest quality ring gears.

Republic Alloy Steel forging billets 4-inches square, are sheared into 5-inch lengths, heated, and put into an automated forging press. The billet goes through seven forging steps, passing from one die to another automatically. After forging the blank is annealed.

Alloy steels are unusually tough and strong. They can absorb sudden shock and impact without failure. Respond uniformly to heat treatment producing hard, wear-resistant surfaces around tough cores. This tough integral structure provides greater strength with greater dependability.

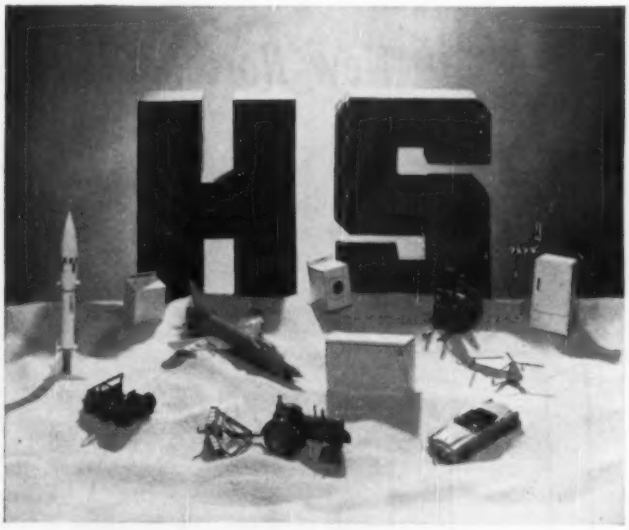
Field metallurgists working closely with Ford metallurgists and engineers in their own plants provided a metal that is tough and strong enough to withstand shock, impact, stress, and fatigue.

Republic's famed 3-Dimension Metallurgical Service Teams—field, mill, and laboratory metallurgists—are available to help you in selection, application, and processing of the right alloy steel for the job. It's confidential. There's no obligation. Send coupon for more information.

REPUBLIC NYLOK® STUDS solve fastening problem for Gravely Tractors, Inc., Dunbar, West Virginia. Problem: Find a dependable fastening method for tractor-attached rotary cultivators. Fastener must withstand constant shocks and pounding of rotary culvitating. Solution: Use Republic Nylok Studs. A special nylon insert assures positive locking at any position, even under severe shock, vibration, tension. Prevents all play. Utilizes metal-to-metal contact of opposing threads for locking. Republic Nylok Fasteners—studs, nuts, cap screws—resist heat, cold, moisture. Can be re-used. Interested? Mail coupon for full facts.

HARD DRAWN ROUND STEEL SPRING WIRE is providing outstanding performance in automotive seat and back cushions, and in furniture and bedding applications. Performance is assured by Republic quality. Standard High Carbon Spring Wire and MB High Carbon Spring Wire are produced by specialists who know and understand both steelmaking and high carbon wire practices. They know spring forming machines and the importance of physicals, finish, cast, and size accuracy in the finished product. Wire metallurgists will assist you in selection, application, and processing. Send coupon for details.

NEW HIGH STRENGTH POWDER, TYPE HS6460, opens the way for new applications using sinterings for highly stressed parts. Type HS6460 can be used with existing operating equipment. It provides a minimum tensile strength of 60,000 psi at 6.4 density as sintered, 100,000 psi heat treated. Type HS6460 maintains its dimensional characteristics after sintering—less than .004 inches per inch shrinkage from die size at 6.4 density. Available in production quantities up to and including 12 tons, or in multiples thereof. Mail coupon for technical data sheet.



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Have a metallurgist call:

☐ Alloy ☐ Metal Powder ☐ Wire

Name_____ Title_____

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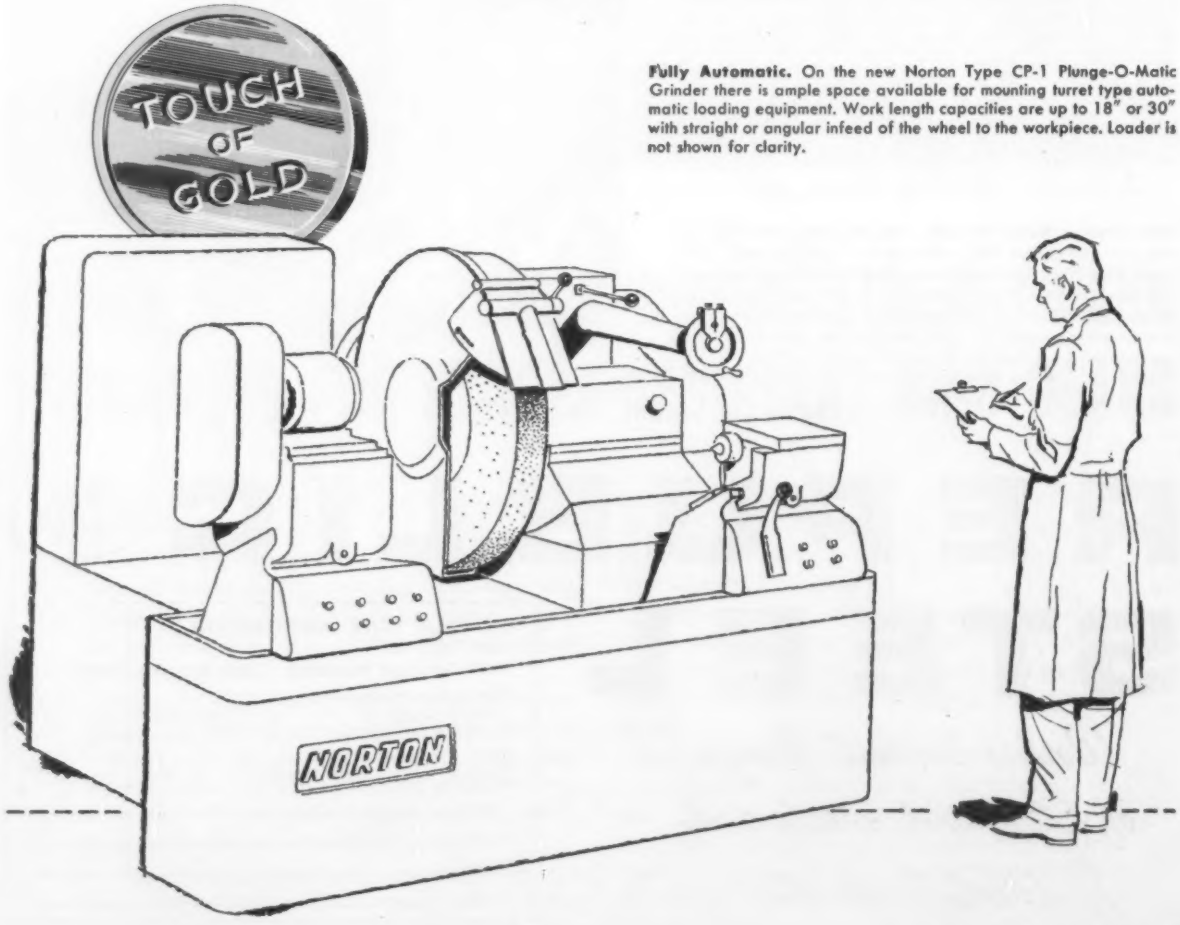
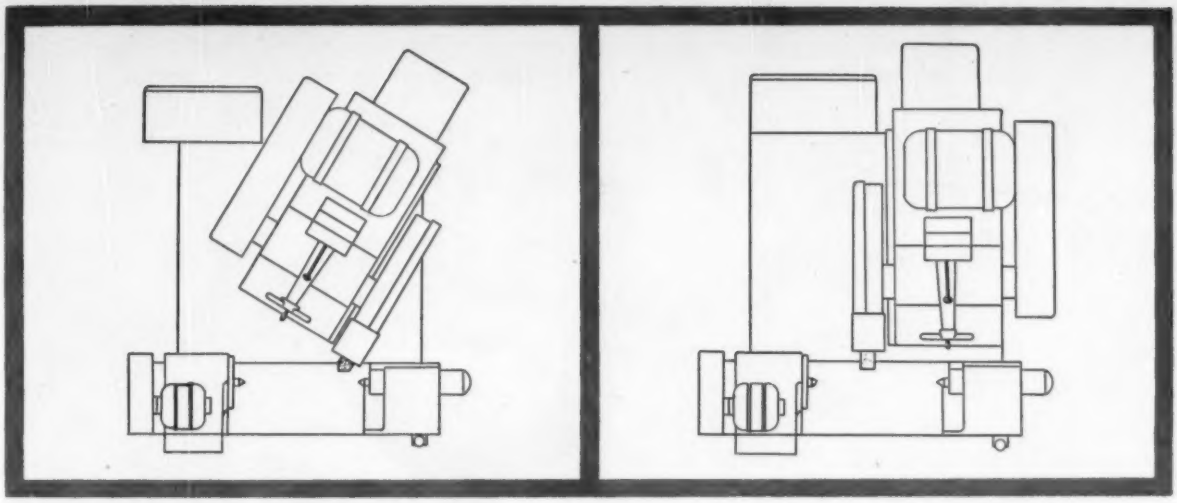
Built for one big purpose!

New Norton Plunge-O-Matic* Grinder simplifies



Fully Automatic. On the new Norton Type CP-1 Plunge-O-Matic Grinder there is ample space available for mounting turret type automatic loading equipment. Work length capacities are up to 18" or 30" with straight or angular infeed of the wheel to the workpiece. Loader is not shown for clarity.



Versatility of design allows positioning the wheelhead as required for the job. Those shown are only two of many possible variations.

automatic loading for mass production grinding

In design, the Norton Type CP-1 Plunge-O-Matic Grinder is brand new. While retaining outstanding proven features of Norton cylindrical grinders — and co-ordinating them with a new turret type loader for fast, automatic plunge grinding — it has no unnecessary mechanism.

As traverse grinding is not involved, swivel and sliding tables, hydraulic table cylinder and attendant control valving have been eliminated. Taper adjustments are made in the automatic truing device located in the wheelhead. The base contains no inner mechanism, its sole function is to rigidly support the headstock, footstock, wheel slide and loader.

This machine provides for automatic loading — a new departure from the usual cylindrical grinder design. On the Plunge-O-Matic Grinder the gap in front of the grinding wheel is 19" deep by 18" or 30" work length — ample space to accommodate the new turret loader. And since one type of loader can handle many parts, only the loader insert, which actually holds the parts, needs specific designing. This reduces the original cost and operating maintenance of automatic loading.

The Plunge-O-Matic wheel slide, unitized and entirely independent, carries grinding wheels of 30" or 36" diameter and can be located as desired on the base. Complete flexibility for angular grinds is assured, and heavy duty grinding with wide or multiple wheels can be provided for.

Your Norton Sales Engineer, a trained specialist in grinding, will be glad to give you more facts about the Plunge-O-Matic Grinder — with an accurate estimate of how much you can save. NORTON COMPANY, Machine Division, Worcester 6, Mass. District Offices: Worcester, Hartford, Cleveland, Chicago, Detroit. *In Canada:* J. H. Ryder Machinery Co., Ltd., Toronto 5.

*Trade-Mark Reg. U.S. Pat. Off. and Foreign Countries

NORTON

GRINDERS *and* LAPPERS

Making better products
to make your products better

NORTON PRODUCTS Abrasives • Grinding Wheels • Grinding Machines • Refractories • Electrochemicals — **BEHR-MANNING DIVISION** Coated Abrasives • Sharpening Stones • Pressure-Sensitive Tapes

How to cut costs with the RIGHT motor

Don't be baffled by power factors, torques, efficiencies, and starting, accelerating, and thermal characteristics, or housing, horsepower and speed control. Let Century Electric help you balance these factors to cut operating costs with the *right* motor.

Here's how Century Electric can help you:

10,000 choices—Century Electric engineers can help you specify the right motor without having to rely on a few types to do all jobs. Century Electric makes a complete variety of integral horsepower motors. Over 10,000 types up to 400 hp. There is one for every type of equipment—transfer machines, ball mill drives, compressors, drilling machines, lathes, etc. For all operating conditions too—dusty, corrosive, explosive or moist.

Long life motors—And you get years of dependable operation from Century Electric motors. They are manufactured to rigid quality standards. Electrical tests and other checks on operating characteristics made during manufacture assure you the best motor for your money.

Application know-how—Every Century Electric sales engineer knows motor drive systems because he sells motors and nothing but motors. Often he can give you on-the-spot answers. If not, he can turn to an engineering staff that comes up with quick answers.

You can get the right motor for your equipment just by contacting your nearest Century Electric Sales Office or Authorized Distributor. A Century Electric sales engineer will be glad to help you.

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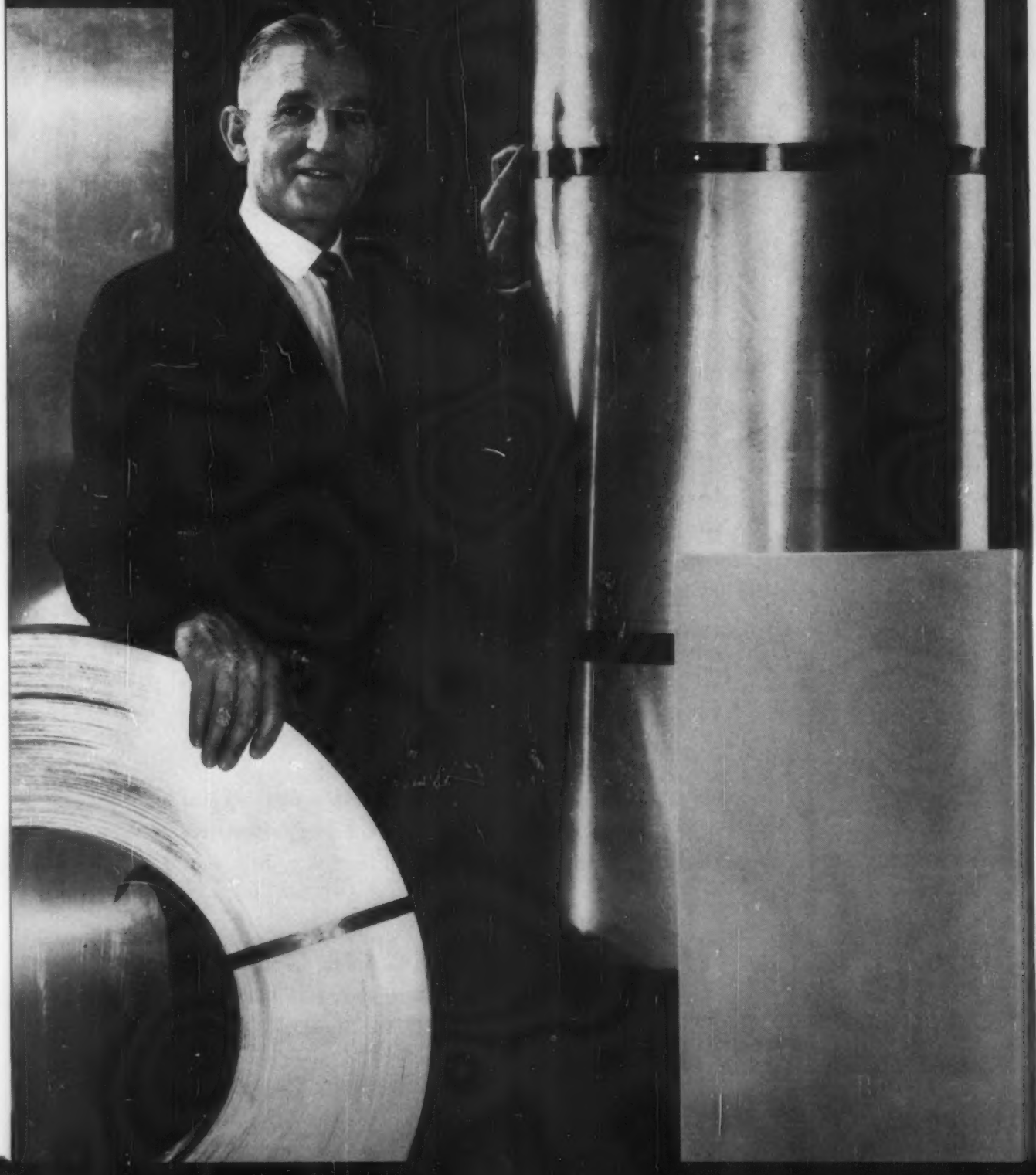
58-22

The Aluminum Man*.

*Twenty-four years a communicator of new progress in metals, Walter S. Lutz—salesman for Alcoa distributor Edgcomb Steel Company of Philadelphia, Pa.—is typical of the men who make service to industry their career . . . through knowledge of aluminum!



He helps step up stamping-out operations

Chances are that *The Aluminum Man* . . . your mill-trained Alcoa distributor salesman . . . can point the way to significant gains in stamping machine operations — with versatile Alcoa® Aluminum *Coiled* Sheet.

Inherently light in weight, high in strength and easy to work, Alcoa Aluminum Coiled Sheet can make possible efficiently *faster* feeds . . . at faster speeds! Thus, effectively reduce handling, labor and production costs. And less factory-fabrication means *lower finished cost*, too!

Check *The Aluminum Man*—your close-as-your-phone representative of America's foremost aluminum producer—for expert assistance in determining *how* and *where* these important advantages can improve stamping machine operations for you.

Call him at your nearby Alcoa distributor, listed below. Remember—his aid and advice are yours whether you need a *few* pounds or *thousands* of pounds of Alcoa Aluminum . . . the light metal with the bright future that's being seen in more places . . . more and more!

ALCOA ALUMINUM

ALUMINUM COMPANY OF AMERICA

Call *The Aluminum Man.* He's your Alcoa Distributor Salesman for aluminum sheet, tube, shapes, screw machine stock and all Alcoa Mill Products.

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Hinkle Supply Co., Inc., FAirfax 2-4541
The J. M. Tull Metal & Supply Co., Inc. . . . FAirfax 3-1612

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LOUISIANA
New Orleans
Metal Goods Corp., JAckson 2-7373

MARYLAND
Baltimore
Whitehead Metals, Inc., EAstern 7-3200

MASSACHUSETTS
Cambridge
Whitehead Metals, Inc.
TRowbridge 6-4680
Roxbury
Eastern Metal Mill Products Co.
Highlands 2-5900

MICHIGAN
Detroit
Central Steel and Wire Company
TWinbrook 2-3200
Steel Sales Co. of Michigan, TYler 6-3000

MINNESOTA
Minneapolis
Steel Sales Co. of Minnesota
STerling 1-4893

MISSOURI
North Kansas City
Marsh Steel & Aluminum Co.
GRand 1-3505
Metal Goods Corp. . . . GRand 1-3516
St. Louis
Metal Goods Corp., HArrison 7-1234
Steel Sales Co. of Missouri, Inc.
PRospect 1-5255

NEW HAMPSHIRE
Nashua
Edgcomb Steel of New England, Inc.
TUxedo 3-7731

NEW JERSEY
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Whitehead Metals, Inc., HUmbolt 5-5900
Hillside
Miller Steel Co., Inc., WAverly 6-6000
Kenilworth
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MUrdock 6-6900

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Buffalo
Brace-Mueller-Huntley, Inc.
Victoria 8700
Whitehead Metals, Inc.
BEdford 3100
New York
(Brooklyn) Strahs Aluminum Company, Inc., BRowning 2-7000
(L. I. City) Adam Metal Supply, Inc.
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WOrth 6-1200
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Sachs Metal Supply Co.
FAirview 8-1710
Syracuse
Brace-Mueller-Huntley, Inc.
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Whitehead Metals, Inc.
GRanite 4-4641

NORTH CAROLINA
Charlotte
Edgcomb Steel Co., FRanklin 5-3361
Greensboro
Edgcomb Steel Co., BRoadway 5-8421

OHIO
Cincinnati
Central Steel and Wire Company
AVon 1-2230
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Exacting Requirements?

for PRECISION . . . specify

ACIPCO

CENTRIFUGALLY SPUN STEEL TUBES

For almost 80 years, Morton Manufacturing Company of Muskegon Heights, Michigan, has been progressively building bigger and better machine tools.

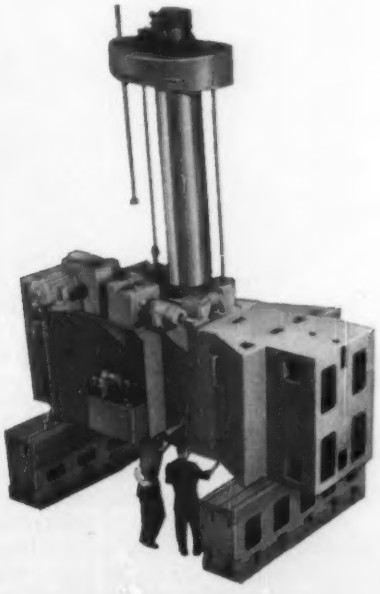
This ultra-modern turning and boring mill is 27 feet x 22 feet x 40 feet high, and weighs 525,000 pounds. Load capacity is 120,000 pounds. Driven with 210 horse-power, it is the first machine of its type wherein the work remains stationary.

Because of the herculean task this machine must perform, each component must be capable of precise performance under extreme loads. Morton wisely selected ACIPCO centrifugally spun steel tubing for the gigantic quill which houses and guides the rotary spindle. This tube is 24″ in diameter, 3″ in wall thickness and 17′6″ long.

ACIPCO centrifugally spun tubes have a dense, non-directional grain structure that has extra-ordinary strength and durability, and is more easily machined to close tolerances.

Whatever you may have in tubular applications, call on ACIPCO for perfect dependability. Our technical and manufacturing competence will serve your exacting needs.

MORTON



Morton Manufacturing Company, of Muskegon Heights, Michigan, is a leading manufacturer of heavy duty machinery for the machine tool industry. Boring mills; drillers, planers, as well as special machine tools for national defense and the development of new processes are among their products.

ACIPCO Centrifugally Spun TUBES

SIZE RANGE: Lengths up to 410″ have been produced to meet modern machinery requirements. OD'S from 2.25″ to 50″; wall thicknesses from .25″ to 4″.

ANALYSES: All alloy grades in steel and cast iron, including heat and corrosion resistant stainless steel, plain carbon steel and special analyses.

FINISHED: As cast, rough machined, or finished machined, including honing. Complete welding and machine shop facilities for fabrication.

SPECIAL PRODUCTS DIVISION

AMERICAN CAST IRON PIPE CO.

BIRMINGHAM 2, ALABAMA

ACIPCO

STEELWELD PRESS BRAKE CUTS FORMING COSTS

Fast Two-Step Operation Speeds Trolley Duct Production

ELECTRIC trolley duct is turned out at a high rate on a Model K5-10 Steelweld Brake. The machine is fitted with removable bed and ram brackets to provide the width necessary to support two sets of dies. The front dies flange both sides of steel strips. The rear dies form the flanged strips into ducts. Thus, with each stroke of the ram, two operations are performed and a trolley duct completed. As many as 20 ducts can be produced per minute, which is the speed of the machine.

Two men normally work at the press, and each is provided with a set of control buttons. As a safety measure, two "run" buttons, requiring both hands of the two men, must be depressed to operate the machine.

This machine has air-electric control which eliminates the need of any cross shafting at front for mechanical foot treadles. Air-electric control makes push-button operation possible and provides fast, positive clutch and brake action.

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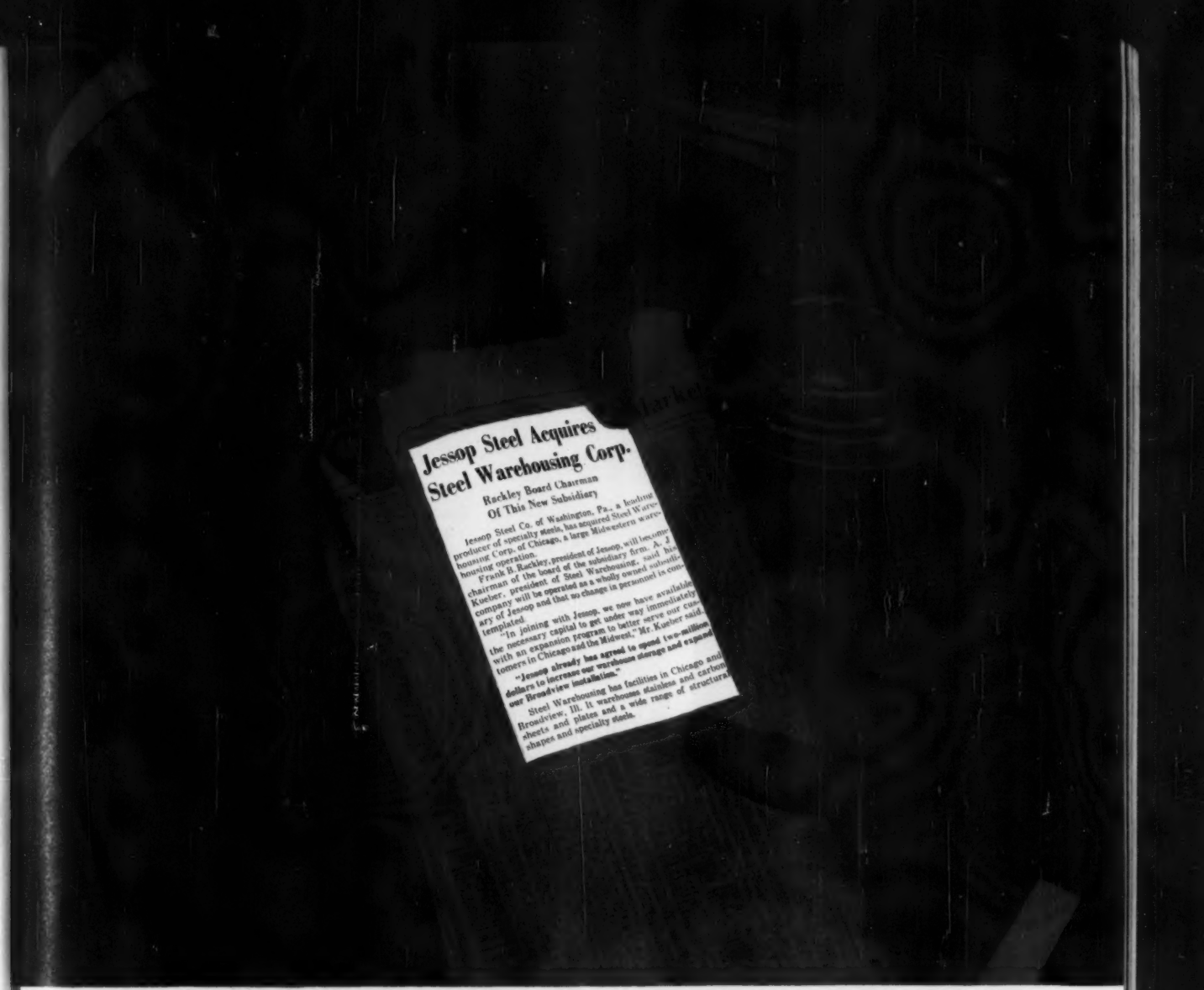
Mechanical and Hydraulic

PRESS BRAKES

Steelweld Machinery includes: Mechanical & Hydraulic Shears and Press Brakes, One-, Two- and Four-Point Straight-Side Presses, Speed-Draw Presses.

THE CLEVELAND CRANE & ENGINEERING COMPANY · 4872 EAST 281st STREET · WICKLIFFE, OHIO



Jessop buys Steel Warehousing Corporation . . . another reason for your confidence!

When you specify Jessop specialty steels, you've got good reasons for that decision. For example . . .

With Jessop, you're dealing with success. Although it's only two years since the acquisition of Green River Steel, Jessop now adds Steel Warehousing of Chicago. Already a two million dollar expansion of warehousing facilities is underway.

This fast growth didn't just happen. It results from the Jessop policy of producing the highest quality specialty steels *and keeping delivery promises!*

Yes, you have good reasons to be confident when you specify Jessop.

VMA 1121

JESSOP
STEEL COMPANY
Washington, Pennsylvania

Subsidiary Companies

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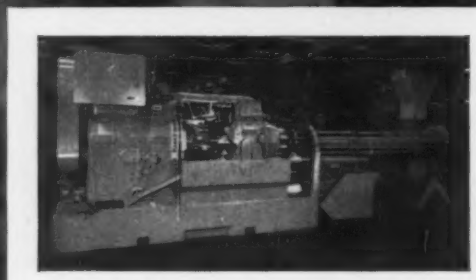
Jessop Steel of Canada, Ltd., Wallaceburg, Ontario
Jessop Steel International Corporation, New York City
Steel Warehousing Corporation, Chicago and Broadview, Ill.

Stainless, alloy, tool, cast-to-shape, and forging steels, precision ground flat stock, and other specialty steels



Acme-Gridley, 1¼" RB 8 producing 690 nozzle bodies per hour

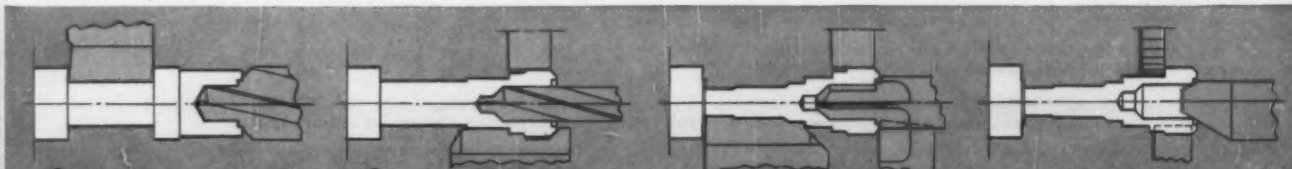
Close-up of tooling zone showing 5th, 6th and 7th positions.

ACME-GRIDLEY ELIMINATES SECONDARY OPERATIONS...

for Eagle Manufacturing Company

- Direct Cost Reduced 48%*
- Production Time Reduced 64%

* Details on request



8. Feed out—rough form rear diameter—counterbore and drill large hole part way

1. Form two front diameters and chamfer head—drill large hole remainder—support

2. Form two rear diameters—ream large hole—face end—support

3. Stop spindle rotation—mill flat—support

As a part of a continuing contribution to all phases of cost reduction, National Acme engineers initiated the development work necessary to effect important savings for this 65 year old Wellsburg, W. Virginia company.

The aluminum nozzle body of their hydraulic pump oilers formerly had been produced on a six spindle automatic and two other machines performing secondary operations. Visionary machine tool engineering made possible the application of spindle stopping and positioning on an eight-spindle Acme-Gridley to complete the entire piece *in the primary set-up . . . and increase net production.*

Advanced design and development such as this, together with wide open tooling zones, independently operated tool slides and the extreme accuracy and flexibility of direct camming . . . makes possible the solution of "unusual" jobs an "every day" occurrence at National Acme.

Write or ask one of our representatives for the complete story on the industry's most modern approach to *your* cost reduction problem.

NATIONAL ACME'S
"ZONE OF RESPONSIBILITY"
INCLUDES ALL PHASES OF COST REDUCTION

Check YOURS...Then Check National Acme

Direct Costs: these include direct dollar savings as realized by the Eagle Manufacturing Company . . . an "every day" job for Acme-Gridleys.

Indirect Costs: effecting important savings in maintenance, downtime, scrap reduction, tool costs, etc.

Product Redesign: teaming with your design group to take full advantage of Acme-Gridleys' cost reducing capabilities.

Direct Material Costs: our engineers provide important savings in this area by constantly matching machines and tools to modern metallurgical problems.

Make-or-Buy Reviews: in many cases our Contract Division can assume your production headaches and relieve you of immediate capital investment.

Spot Modernization: pioneering in modern tooling methods, and the flexibility of Acme-Gridleys can provide many "on-the-spot" savings.

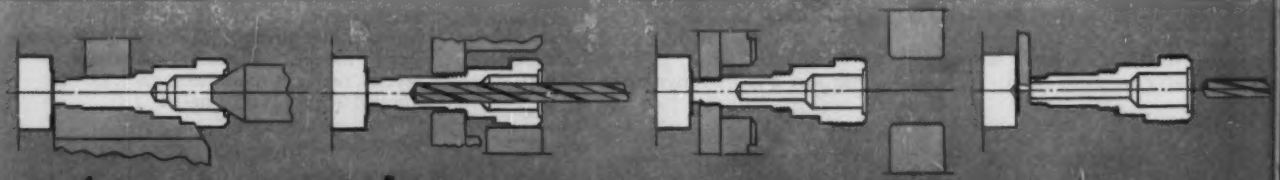
National Acme

The National Acme Company
175 E. 131st Street
Cleveland 8, Ohio

Sales Offices: Newark 2, N.J.; Chicago 6, Ill.; Detroit 27, Mich.

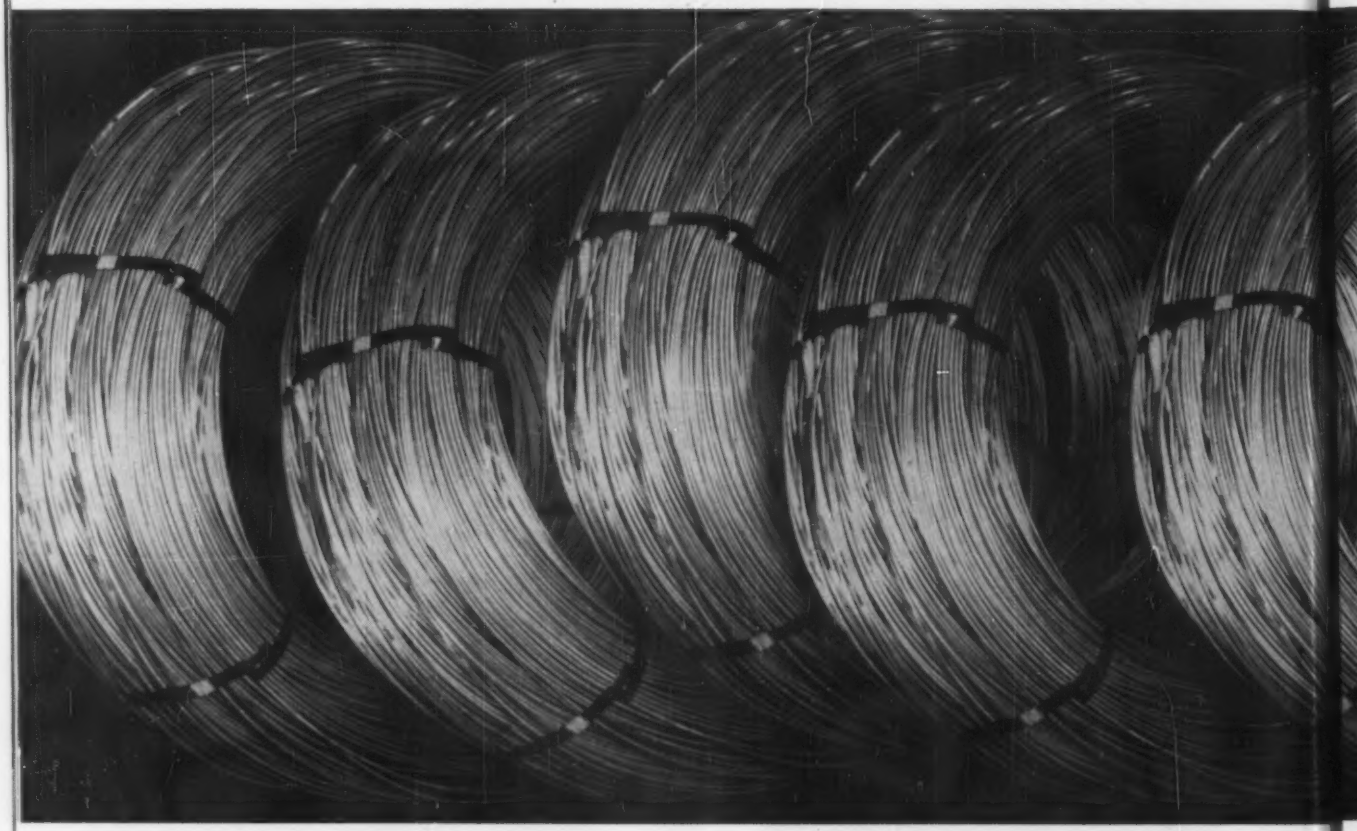
Pioneer in Circumferential Automation

15 Operations in 5.5 Seconds

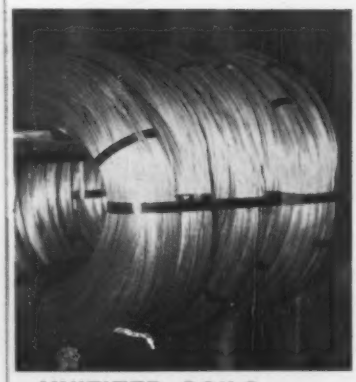


4. Start spindle—shave all over—support
5. Roll center thread—drill small hole part way—support
6. Roll rear thread—thread head
7. Drill small hole remainder—cut

Save down time... save handling
order your wire in AS&W



Other important time- and space-saving AS&W

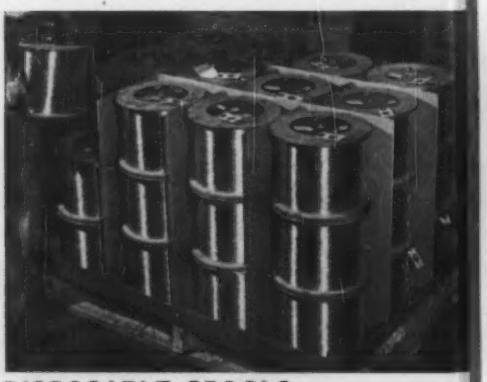


UNITIZED COILS

Several regular mill coils bound in one unit to speed up handling and save storage space. Unitized coils carry no price extra!

PAY-OFF DRUMS

Large, fibre, disposable drum containing long continuous coil. Pay-Off Drum is easy to handle and stack, protects wire finish from dirt and corrosive atmospheres.



DISPOSABLE SPOOLS

Contain from 5 to 65 pounds of fine wire. These non-returnable spools are convenient to handle and stack. Where wire is needed in large quantities, they can be shipped 36 spools on a pallet.

time . . . save storage space . . .
NEW HEAVYWEIGHT COILS

These large coils of continuous wire—up to 2,000 pounds—are designed by American Steel & Wire to help speed up your plant operation, increase your production—at no extra increase in wire cost.

With these large coils in place of regular mill coils, your machines stay in operation much longer, thus reducing down time costs. You save on handling time. You have only one wire coil to move in place of several. You save on storage space. One large coil takes up less room than several smaller ones.

FOR MILLS: Where Heavyweight Coils are not practical, American Steel & Wire supplies Manufacturers Wire in a variety of other time- and space-saving packages.

USS American Manufacturers Wire

Wire Packages:

PLATFORM COIL CARRIER

Made of U-shaped wire frame attached to deck platform; holds up to 3,000 pounds of wire in continuous lengths.

All of these new American Steel & Wire Packages are planned to serve you better, to help you use warehouse space to better advantage, to save time and money.

For more information, get in touch with the nearest district office of American Steel & Wire. General Offices: American Steel & Wire, 614 Superior Avenue, N.W., Cleveland 13, Ohio.

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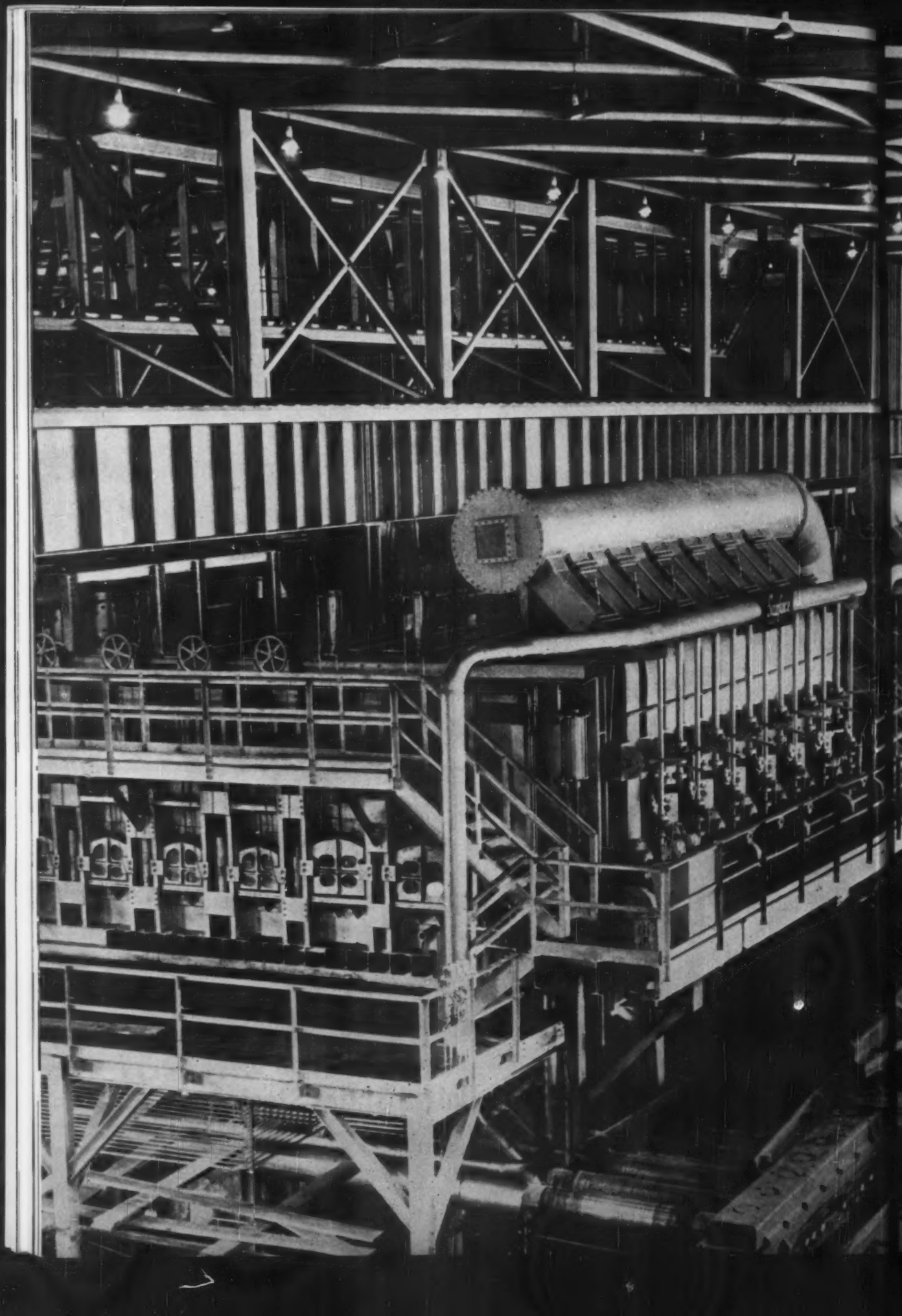
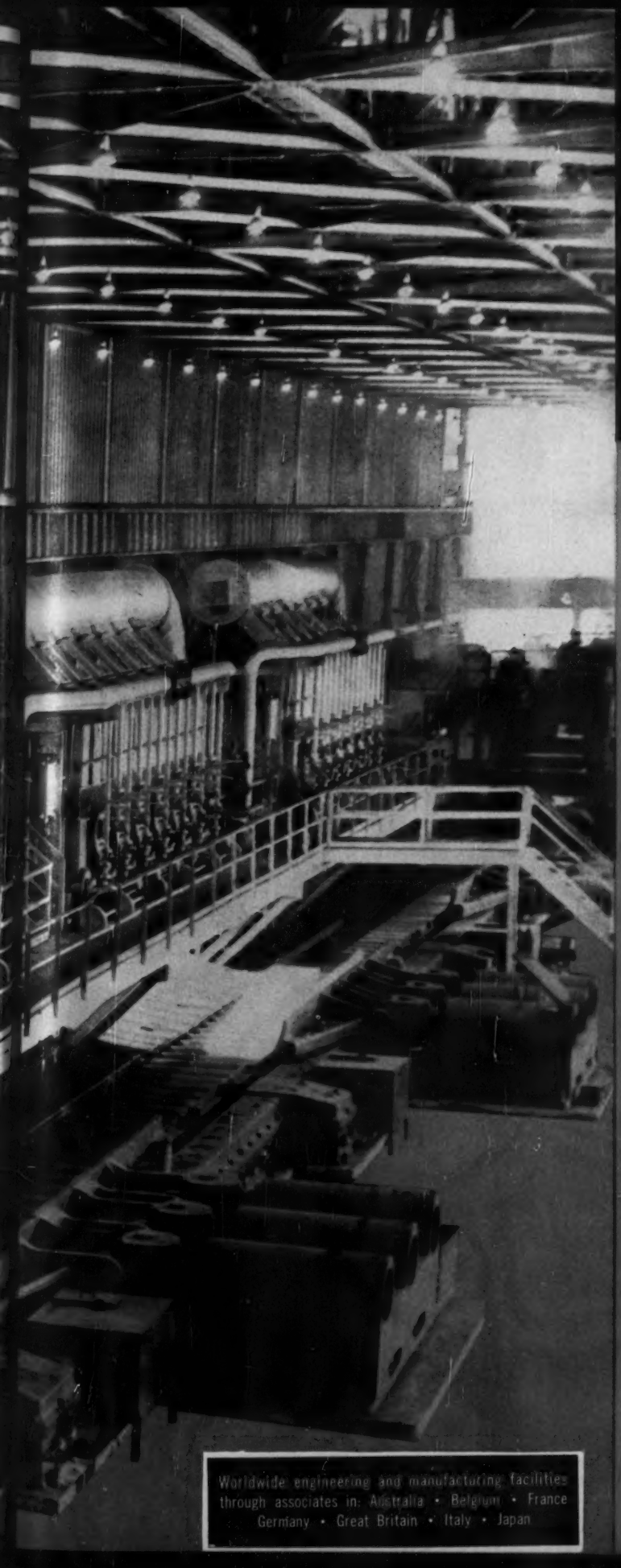
American Steel & Wire Division of United States Steel

USS

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors • Tennessee Coal and Iron Division, Fairfield, Ala., Southern Distributors • United States Steel Export Company, Distributors Abroad





200 TONS AN HOUR

CONTINUOUSLY

200 tons of steel slabs are heated to rolling temperature every hour, continuously, in each of these Surface monsters—world's largest slab furnaces.

No other furnace today can list all of these features:

1 Cantilever skid supports* permitting unobstructed combustion space for underfiring.

2 Furnace lines and burner design which provide high heat input from the moment the slab enters the furnace.

3 Built-in control* to prevent intermingling of gases from upper and bottom zones, providing better control of heat application, and preventing overheated slab end.

4 Anticipatory control which reduces temperature head when rate of slab discharge decreases.

5 Air preheat up to 1100°F.

6 Television signal to pusher pulpit, informing operator of the exact position of the leading slab.

This is another demonstration that, at Surface, unconventional thinking and conventional experience are a productive team for the steel industry. Surface Combustion Corporation, 2402 Dorr St., Toledo 1, Ohio.

*patents pending

Surface

wherever heat is used in industry

Worldwide engineering and manufacturing facilities through associates in: Australia • Belgium • France Germany • Great Britain • Italy • Japan

integrated CRUCIBLE steel service

Average Crucible warehouse stocks these and many other specialty steel items in a tremendous range of sizes and analyses. A single phone call will bring any or all of them to you *in the quantity you need.*

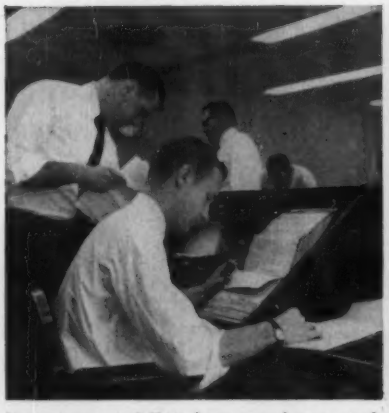
keeps 16,000 specialty steel items flowing from mills to local warehouses for immediate delivery to you

Every day, thousands of specialty steel items flow from Crucible mills to Crucible's 31 strategically located warehouses – keeping local stocks at levels that meet customers' *maximum* needs.

Here's how these continually-replenished stocks are helping one steel buyer today. He says:

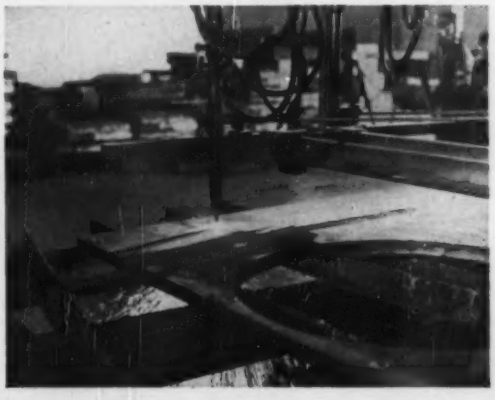
"We reduced plant inventory to cut operating costs and free working capital and space. This is smart business. But it creates problems, too–like when production requisitions an extra-large order of 36" x 120" Type 304 stainless sheet, 20 ga and 2B finish – *and needs it overnight.* I solve this problem by calling the Crucible warehouse. It's set up to give us the kinds of steels we need from stock."

All 31 Crucible warehouses offer in-stock delivery of approximately 16,000 specialty steel items, ranging from tool steels to stainless sheet and wire. They're able to maintain these high inventories because they're part of Crucible's completely integrated operation, from mining the ore to steelmaking to warehouse delivery to you. If you'd like to know all the ways these warehouses can serve you, phone or visit the one near you today. *Crucible Steel Company of America, Dept. PE06, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.*



Inventory specialists keep warehouse stock records up-to-date to give you fast, accurate answers on availability of every analysis.

Steels you ordered yesterday arrive today at your receiving platform — dependably on schedule.



Warehouses maintain modern equipment, like this electronically-controlled flame cutter, for fast processing of specialty items.

STOCK LIST

Keeps you up-to-date on local stocks of specialty steels. Just ask the Crucible salesman to place your name on the regular mailing list.

One Source For All These Steels

TOOL STEELS–Water, oil, air hardening, shock resisting, hot work, plastic and die casting steels in all forms, including bars, sheets, plates, drill rod, hollow bars, forgings and flat ground stocks

HIGH SPEED STEELS–Crucible's famous "Rex"® steels: Rex Thrift Finish rounds, flat rolled and cold drawn flats and squares, drill rod, forgings, sheets, plates, and tool bits

STAINLESS STEELS – Bars, sheet, strip, wire, cold heading wire, metalizing wire, plates, angles

FREE MACHINING STEELS – Crucible Max-el® rounds, hexagons, plates and brake die steel
ALLOY STEELS – Bars, billets, strip and sheet
COLD ROLLED CARBON SPRING STEELS
DRILL STEELS – Hollow and solid drill steels
ALUMINUM EXTRUSION DIE STEELS
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WELDING AND HARD FACING ROD
PLASTIC MOLD STEELS
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– and many others

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FOR INDUSTRIAL EQUIPMENT

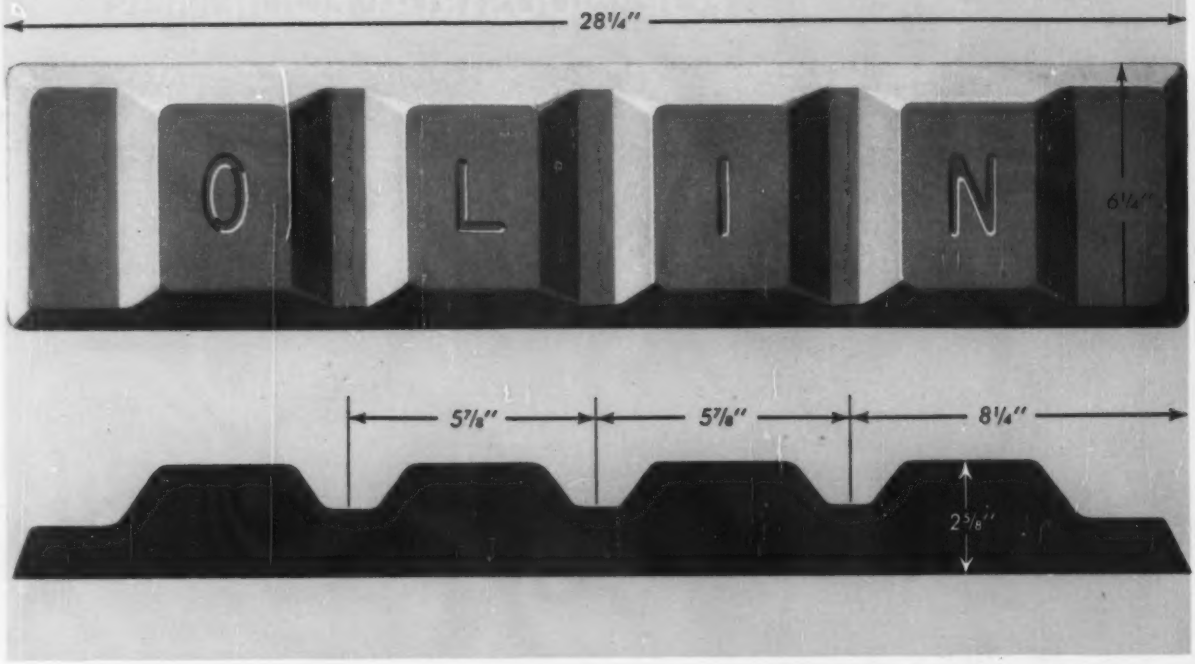
DEMAG, with its 140 years of experience as supplier to industry, makes available its services to all continents for the solution of large-scale technical problems. So far, complete equipment for more than 2000 rolling mills has left DEMAG's workshops – convincing evidence of the Company's productive capacity.

The picture shows the broad flange beam mill recently put into operation at a German iron and steel works. This mill is also used to manufacture new "European-type straight flange beams" (IPE sections).

DEMAG DUISBURG GERMANY

U. S. Representatives:
AMERICAN DEMAG CORPORATION,
one Gateway Center, Pittsburgh 22, Pa.

YOU'LL FIND GOLD
IN THIS NEW 25 POUND OLIN ALUMINUM INGOT!



Now, a 25 pound ingot from Olin Aluminum. Consider its advantages for you!

Smaller size. Easier to store, easier to gauge metal supply for closer control.

Lighter weight. 25 lbs. vs. 30 lbs. Greatly increases handling efficiency.

Deeper notches. Easier to break. Saves time, eases work load.

More sections. 3 notches, 4 sections vs. 2 notches, 3 sections. Reduces waste.

Same price per pound as 30 lb. ingot. Olin Aluminum is the only prime supplier producing a 25 pound ingot, and at no additional cost.

America's new major aluminum producer, Olin Aluminum, is also the newest source of profitable ideas for foundrymen. Take advantage of it. Contact your nearby Olin Aluminum Sales Office or Authorized Distributor of casting alloys. Ask for our pig and ingot technical data bulletin. Metals Division—Olin Mathieson Chemical Corporation, 400 Park Avenue, New York 22, New York.

OLIN ALUMINUM

Symbol of New Standards of Quality and Service in the Aluminum Industry

Lincoln

WELDYNAMICS

NEWS ABOUT ARC WELDING AT WORK CUTTING COSTS

Better quality, lower cost when Lincoln mild steel wire and alloy fluxes are used on high pressure pipe.

HOW FLORI PIPE CONTROLS QUALITY AND COSTS . . . MEETS DELIVERY DEADLINES

Keeping quality up, costs down and still maintaining delivery of prefabricated pipe sections is a tough job for anyone. But even on such vast piping jobs as Tidewater Oil Company's Delaware refinery it is all in a day's work to the Flori Pipe Company of St. Louis, Missouri. Flori is one of the nation's leading fabricators of high pressure pipe for the petroleum and petro-chemical industry.

Flori's Welding Engineer is Ken Notvest. He is responsible not only for welding methods and procedures; but also for maintaining the high degree of welding quality required on the special alloy pipe work in which Flori specializes.

Jetweld LH-70 gives 99% X-ray acceptance.

Mr. Notvest has developed some excellent procedures for manual welds. He uses Fleetweld 5-P, a Lincoln E-6010 electrode, for root beads in carbon steel pipe and follows with Jetweld LH-70, a low hydrogen E-7018, for cover passes. This gives them 99% X-ray acceptance on open gap welds without backing rings.

After testing many different electrodes for this application Mr. Notvest believes Jetweld LH-70 to be superior for deposition rate, appearance, out-of-position welding, and as-welded low temperature impact strength.

Flori also has many automatic submerged arc welding applications in their pipe fabricating plant. They once welded alloy pipe with alloy wire and neutral flux. However, as a result of a survey conducted in the plant by John Lucas, a Lincoln welding engineer, they have found that Lincoln alloy fluxes (mixed especially for them), and mild steel wire cut material costs by two-thirds—cut welding time in half and make better welds.

Mr. Notvest claimed, "When we invited the Lincoln man to survey our operations we had no idea that the result would make such substantial savings."

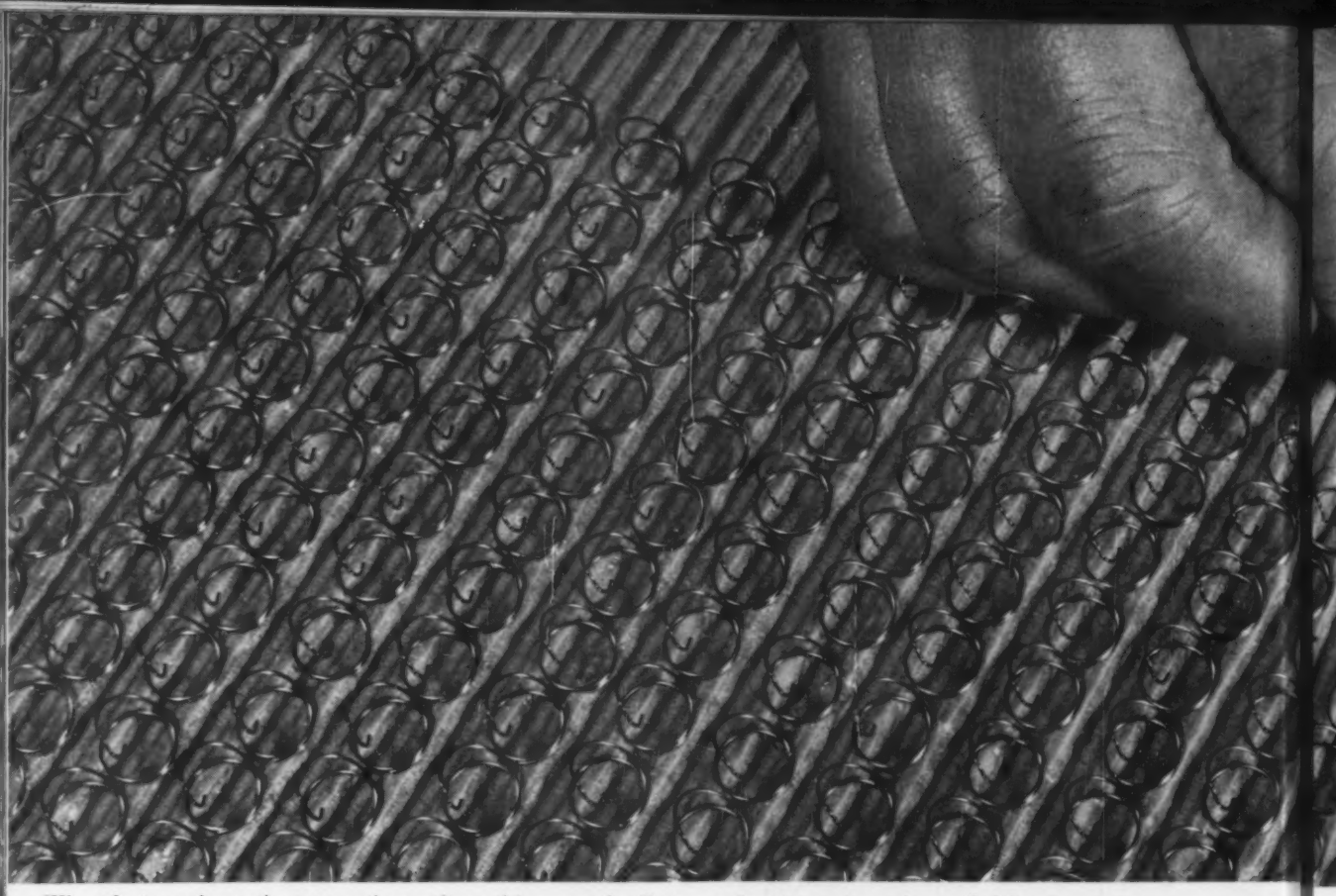
For cost reduction ideas and help with procedures, call your Lincoln welding engineer today.

Ken Notvest, Flori's Welding Engineer, examines a weld from the inside with the "Bore Scope" he designed and built.

The LINCOLN ELECTRIC CO.

Dept. 1554 • Cleveland 17, Ohio

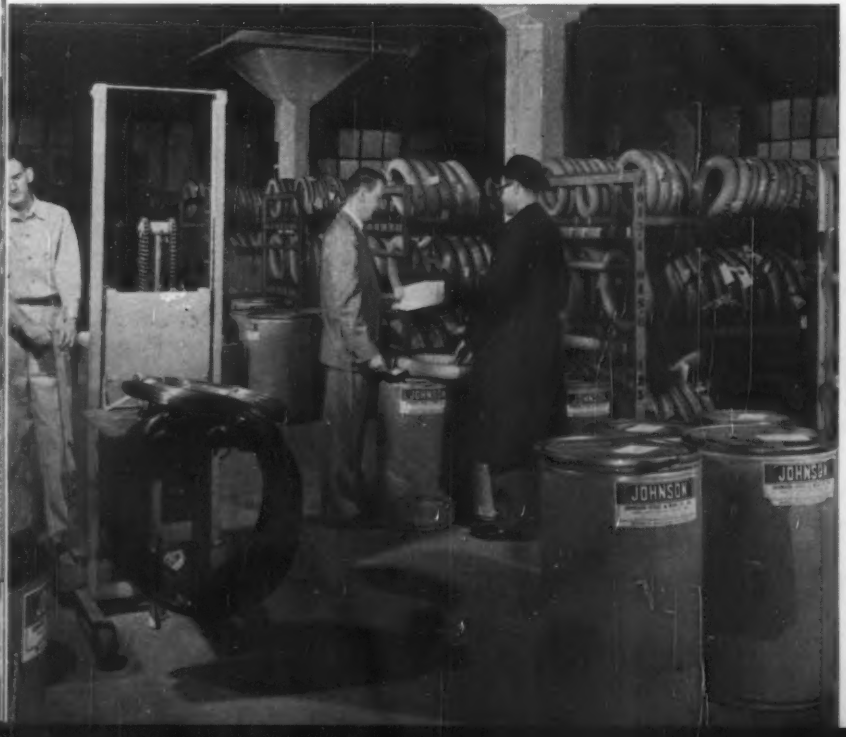
The World's Largest Manufacturer of Arc Welding Equipment



Wispy but precise as the pattern they make on this gummed pallet are carburetor pump springs coiled from Johnson Steel's .014 tin-coated music wire.

Johnson Steel's Wire Is In Springs That Are . . .

'Out Of This World'



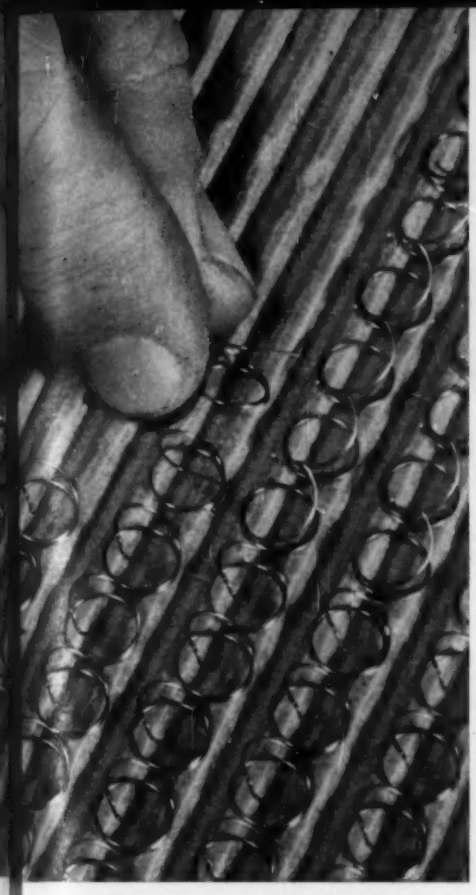
Mid-West Spring relies on Johnson Steel's Music Wire to make precise springs for satellites to sewing machines.

Trouble is their business . . . customers' trouble, that is—even in Outer Space.

That's the approach of Mid-West Spring Manufacturing Co. of Chicago, a firm that goes after the tough jobs with the help of Johnson Steel & Wire Co., its major supplier.

"We want the job the others can't do, whether it's a spring for a space missile or for a thermostat in your home," says R. H. Muehlhausen, vice president of sales.

Full range of Johnson Steel's specialty wires stocked at this warehouse guarantees same-day delivery to wire users in Chicago area.



of them literally "out of this world," performing functions in missiles and satellites now in orbit. Other products of the firm's three plants are used in farm implements, business machines, furnace controls, autos, home appliances and various electronic devices.

Mid-West uses the full range of Johnson Steel's music wire, from .003 to .300 inch, in all finishes. Every coil is checked first with a pilot spring, next at set-up on the coiler and finally at random in production. Some special springs get 100 percent electronic testing.

Roland Parduhn, Mid-West's methods engineer, says:

"We watch tensile strength, surface condition and size very closely. Any deviation or defect, and too many springs would vary from their designed load. We depend on Johnson Steel to maintain consistent quality."

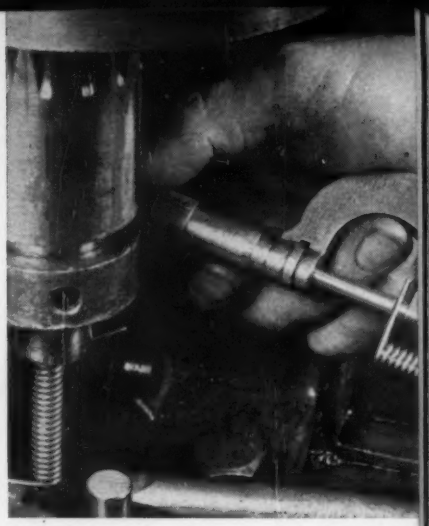
This applies especially to one of the company's biggest production run items—a tension spring for the Anderson Co. of Gary, Ind., supplier of ANCO windshield wiper blades and arms to the automobile, truck, bus and aircraft industries.

• **Coils for Precise Control**—The spring precisely controls the pressure of the wiper on the glass. Too much pressure and the wiper will stall; too little and it will flutter in the wind.

Mid-West's production of this spring—numbering in the millions—represents a rugged performance test, but Johnson Steel's music wire is its match.

The help that Johnson Steel gives Mid-West Spring in its production processes can be duplicated for your advantage. Whether your need is music wire, or any of the many other products in Johnson's complete line of specialty wires, the benefits start the moment your order is received.

A national sales staff is ready to help you quickly and profitably with any application. Contact the district office nearest you.



Unvarying size, tensile and surface of Johnson Steel's .084 music wire meets Mid-West Spring's demands for coiling this windshield wiper spring.

Fatigue test measures endurance of wiper spring. Here spring records its 2,800,000th stroke with no sign of load loss.

Coilability counts in making this thermostat control spring, which is tested and sorted electronically on coiler. Adjustable-screw plug is threaded in spring, made of Johnson's .058 music wire.

Tooling, production skill, close control of quality and reliance on Johnson Steel's music wire for 31 years enable Mid-West to take difficult jobs in stride.

"Johnson Steel is the only manufacturer who can provide us with a full range of music wire, plus oil tempered and variously coated as well as bright, hard drawn spring wires we require," says James J. Dunne, purchasing agent and assistant sales manager. "The large stock in their Chicago warehouse is a distinct advantage, especially when we are pressed for fast delivery."

Mid-West is a leading producer of precision-engineered springs—some

Johnson Steel & Wire Company, Inc.

Worcester 1, Massachusetts

a subsidiary of **Pittsburgh Steel Company**

Grant Building • Pittsburgh 30, Pa.

DISTRICT SALES OFFICES

Atlanta	Cleveland	Detroit	Los Angeles	Pittsburgh
Chicago	Dayton	Houston	New York	Tulsa
			Philadelphia	Warren, Ohio

WHERE DO YOU LOOK FOR LOWER COSTS?

to longer life from a tool costing 4¢ an hour or to greater output from a machine that costs $8 an hour

THIS COMPARISON TELLS THE STORY
(This is only one of many examples . . . details of others on request)

	240 minute tool life setup TOOL COST: 4¢/hr.	25 minute tool life setup TOOL COST: 40¢/hr.
Machine cost per hour	$ 8.00	$ 8.00
Tool cost per hour	$ .04	$ .40
Cost per 8-hour shift	$64.32	$67.20
Pieces run per shift	51	181
COST PER PIECE	$ 1.26	$ .37

Here's how some shops have doubled...tripled...quadrupled the output of expensive machines

From many machine shops the story is the same—*they sacrificed low-cost carbide inserts through increased feeds and speeds . . . and achieved startling savings in total-cost-per-piece.* Production increases even greater than 100% have been recorded. The increased tool costs were insignificant by comparison.

Where machines have been operating at less than maximum efficiency, *unit cost can be reduced overnight* . . . merely by using modern cutting tools to get full potential machine output . . . instead of operating at fractional machine capacity to gain long tool life.

This idea has been PROVEN-IN-USE by many progressive plants. We will gladly send you records of such operations. These results can be duplicated in plants where machines and talented operators have been held back by old ideas about tooling and tooling costs. Ask your Kennametal Carbide Engineer how Kendex* (patented) tooling can help get more efficient output from *your* machines . . . or write KENNAMETAL INC., Latrobe, Pennsylvania, for additional information.

*Trademark

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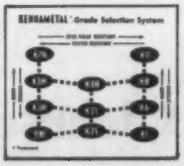
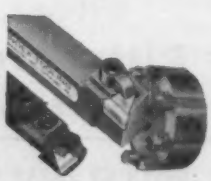
INDUSTRY AND
KENNAMETAL
. . . Partners in Progress

TO MULTIPLY YOUR MACHINE OUTPUT ...YOU NEED 3 THINGS:

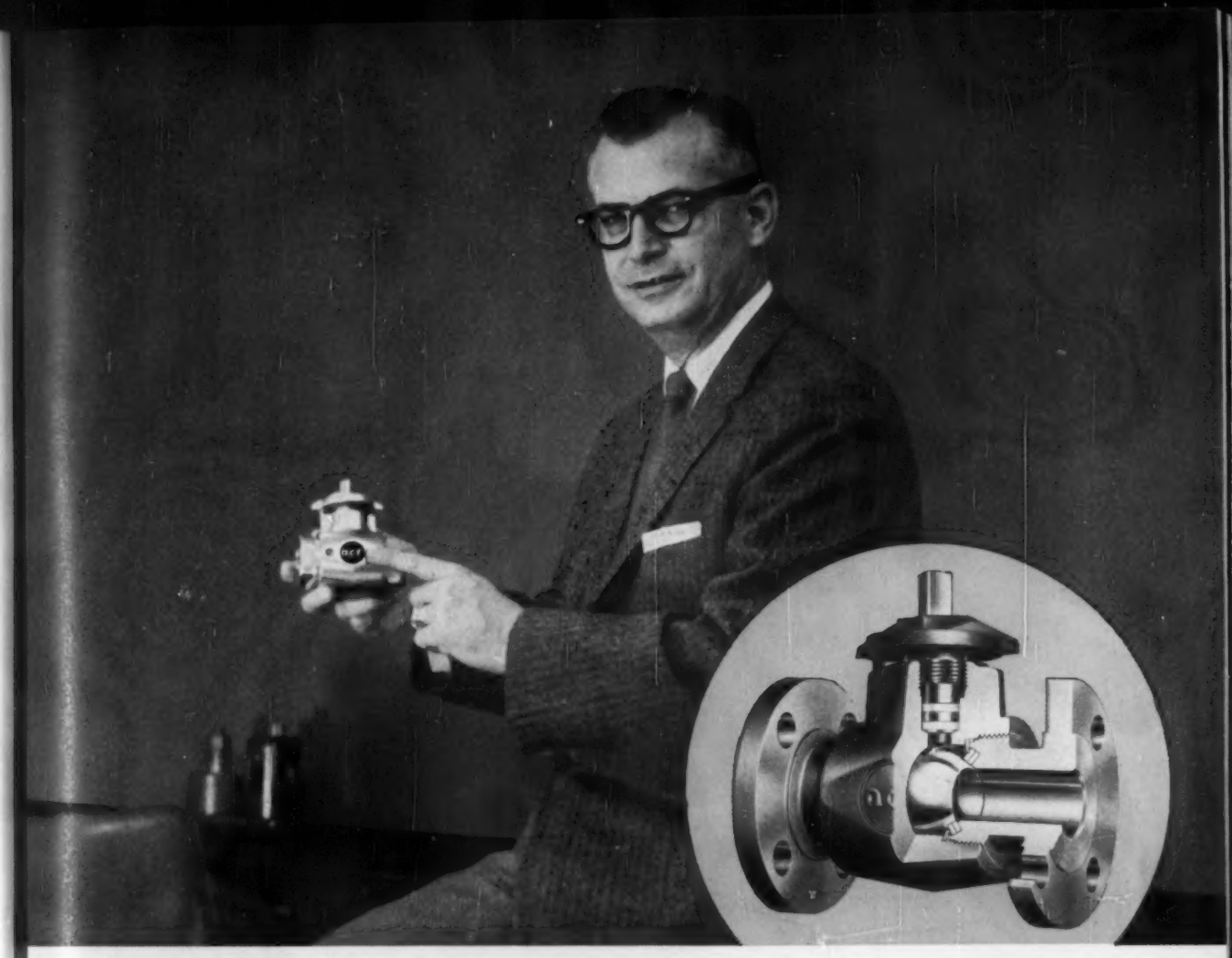
The 'Three-Man Tooling Team' that utilizes the specialized knowledge of your Tool Engineer, your Machine Operator, and the Kennametal Carbide Engineer . . . *to get the right tooling on every job.*

The Kennametal complete range of grades that provides the precise properties and uniformity that permits *accurate prediction of tool life.*





Kendex instant insert change without need to reposition the tool. This is the key to this new practice . . . *frequent tool change without excessive down-time.*



You should know more about the new ACF non-lubricated Ball Valve

Now, while you're thinking about it, ask your secretary to have us send you Catalog 1000.

This catalog will give you a full description of the latest product of W-K-M's creative engineering—the ACF non-lubricated Ball Valve.

This new valve was service-tested for 3½ years before it was offered to buyers. Service-tested and service-proved: in the entire 3½ years, every user reported completely satisfactory results.

It's a great valve, this new one: versatile, rugged, efficient, easy to maintain on those rare occasions when maintenance becomes necessary, a valve you can specify with complete confidence.

So send for Catalog 1000—you should know more about this *new* valve.

Product of W-K-M's *Creative Engineering*

This cut-away picture shows you why this new valve performs so dependably, lasts so long, and is so economical to maintain.

Note the full, round conduit through body and ball that assures full flow through the valve—without turbulence, and with no more pressure drop than through an equivalent length of pipe.

Note the way the ball is suspended between Teflon seats under compression, assuring leakproof service at rated working pressures, or under vacuum, indefinitely.

Note the way actual seating surfaces are sealed away and protected from any abrasive action of the lading flow in either open or closed position.

Available in carbon steel (ASA 150 lb., 300 lb.), and semi-steel (200 lb., 400 lb.). Sizes range from ½" through 6". See Catalog 1000 for full listing of sizes and pressures.

W-K-M

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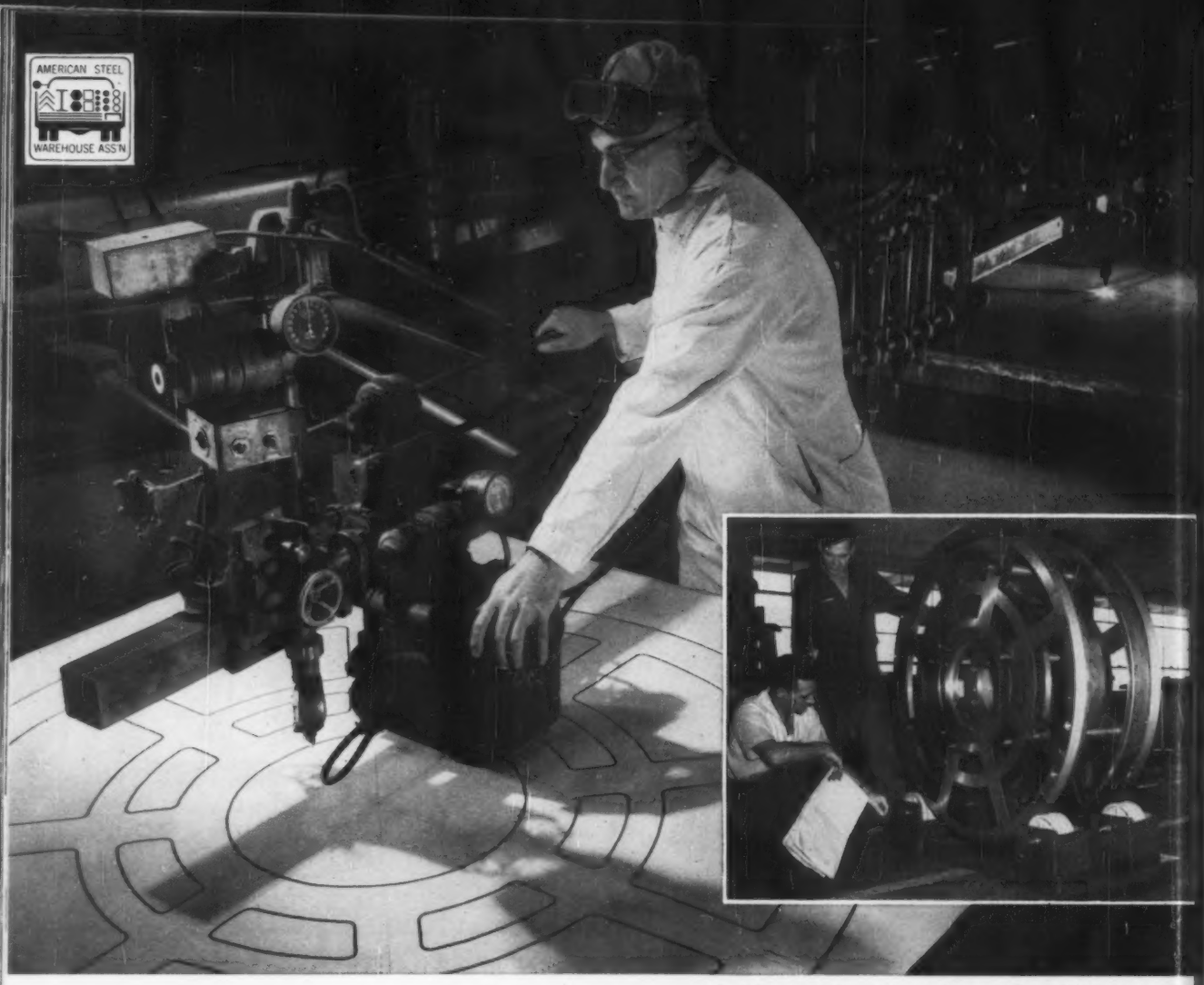

Precision electronic-eye flame cutting on this multiple welder compo
saved many costly hours by eliminating virtually all subsequent machi

Extra Care at "The Department Store of Steel" assures accurate processing of your orders

● When you order flame-cut steel at your J & L Warehouse you receive many cost-free dividends.

Torches are carefully aligned to assure flame-cut edges are perpendicular to plate surfaces.

Slag is removed to facilitate easier grinding or planing. Electronic-eye templates are checked and double checked to insure adherence to your specifications. Inside cut-outs are pierced to provide you with maximum usage of the inside slug. Careful gas pressure and speed adjustments are made to give maximum smoothness of cut—often eliminating the need for edge machining. Edges are painted with the proper grade identification color to help you avoid errors in your plant.

Extra care, yours at no cost when you purchase your steel from the Department Store of Steel, can save you time . . . and save you money.

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The Department Store of Steel

STEEL LABOR OUTLOOK is discouraging. Steel union leaders have cooked up a costly package of demands to be handed steel companies this week. In view of the firm stand of steel companies against contract improvements that would force higher steel prices, the picture is gloomy. Odds still favor a strike.

A LONG STEEL STRIKE is bound to have a depressing effect on the economy. Steel users have built up some inventory, but not as much as they had hoped. Furthermore, as always, stocks are unbalanced. Shortage of one item can hold up output.

DON'T BE SURPRISED if vacuum melting is applied to much larger heats in the near future. The consumable electrode vacuum process is now being considered for making ingots up to 25 tons. In addition, two more smaller furnaces are under consideration.

FARMERS WON'T BUY AS MUCH this year as they did last. The reason: Net farm income will fall by about $1 billion from 1958. Lower prices, higher costs, drop in government soil payments contributed.

NEW RECORD IN HOUSING STARTS is a possibility for this year. Starts in the first quarter hit 295,000 units, some 37 pct higher than last year. The trend is upward.

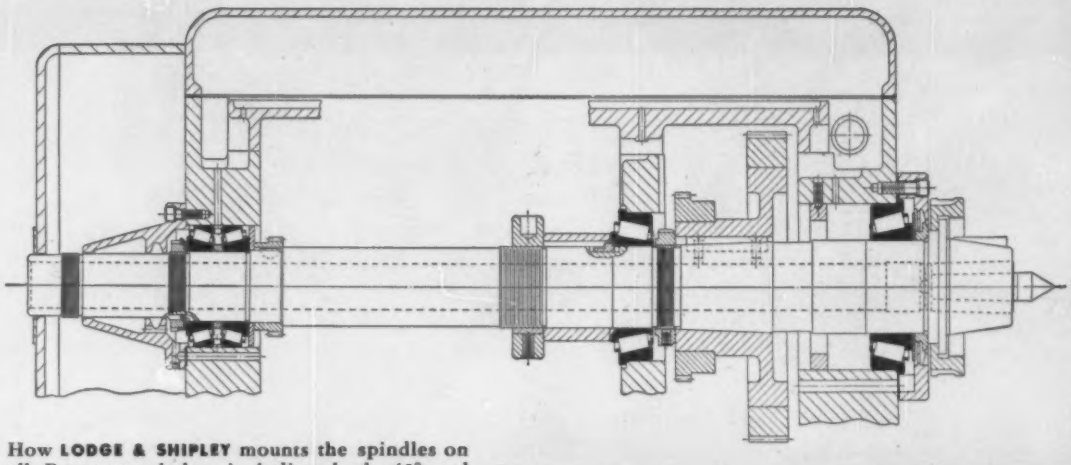
CONSTRUCTION COSTS ARE RISING. The American Appraisal Company Construction Cost Index, a national average, rose 2 points in the first quarter of '59. Higher labor rates and lumber prices are blamed.

FABRICATED STRUCTURAL STEEL SHIPMENTS reflect the improved construction outlook. Shipments in March were the highest this year and 21 pct better than the previous month. However, first quarter shipments of 700,877 tons were 25 pct below the same period in 1958.

AUTOMAKERS ARE EXPLORING the virtues of galvanized steel sheets for areas where rust is a problem. Galvanized is already being used in cars, but tonnage is relatively small. Now, the Big Three and others are seeking ways to use a lot more.

VENDOR CERTIFICATION PROGRAM is cutting inspection costs at the Hotpoint Div. of General Electric. Under the program, vendors are certified in terms of how little inspection of their material is necessary. System may be extended to other GE divisions.

KENNEDY LABOR REFORM BILL is in trouble. It's possible it may die in the House Labor Committee. The reason: It's not as tough on Labor as many influential legislators would like it to be.



How **LODGE & SHIPLEY** mounts the spindles on all Powerturn lathes including both 45° and 90° Copymatics on Timken bearings to get extra rigidity, maintain accuracy, reduce maintenance.

New type lathe ups production 200%, saves users an estimated $8,000 a year

...one secret—TIMKEN® bearings on the spindle

"Production increases as high as 200%"... "Overall savings estimated at $8,000 a year"—read user reports about the new Powerturn 90° Copymatic Lathe. One important reason for such exceptional results is that Lodge & Shipley mounts the spindle on Timken® tapered roller bearings. Timken bearings give it the vital extra rigidity and hold runout to the minimum needed for tracer accuracy.

How spindle is held rigid. Timken bearings hold the spindle in positive alignment. They take *both* radial and thrust loads in any combination, because of their tapered design. And because of full line contact between rollers and races, Timken bearings have extra load-carrying capacity.

Why heavy shocks are absorbed. Case-carburization of Timken bearings' rollers and races gives them hard, wear-resistant surfaces and tough, shock-resistant cores.

How friction is virtually eliminated. Timken bearings are geometrically designed to roll true. And they're precision-made to live up to their design. They run smoother—last longer.

We even make our own electric furnace fine alloy steel, for extra quality control. We're America's only bearing maker that does. To get all these advantages, always specify bearings trade-marked "TIMKEN". The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.

TIMKEN *TAPERED ROLLER BEARINGS ROLL THE LOAD*

TRADE-MARK REG. U. S. PAT. OFF.

Why Industry Wants to Scrap Defense Contract Review

Industrial witnesses have told the government why they don't want the defense contract renegotiation act renewed after June.

They claim it reduces incentive, penalizes the efficient, and rewards the inefficient—By P. J. Cathey.

▪ Government renegotiation of defense contracts should be ended—or, failing that, drastically modified.

That's the stand industry spokesmen took last week in Washington as they testified against extending the Renegotiation Act when it expires this June.

(The Act sets up machinery for government review of defense contracts to assure reasonable prices are charged. When "windfall" or "excess" profits are believed discovered the government asks contractors for refunds.)

What Industry Thinks — But, witnesses contended, as now administrated, renegotiation:

Harms the national defense effort. Discourages efficiency by taking away incentive "bonuses" earned for good performance and cost-cutting. Arbitrarily decides when profits are "excessive." And piles up paperwork and long-drawn-out legal proceedings for defense contractors.

In addition, the witnesses stressed, renegotiation is not needed. Existing provisions give the government adequate protection against profit gouging.

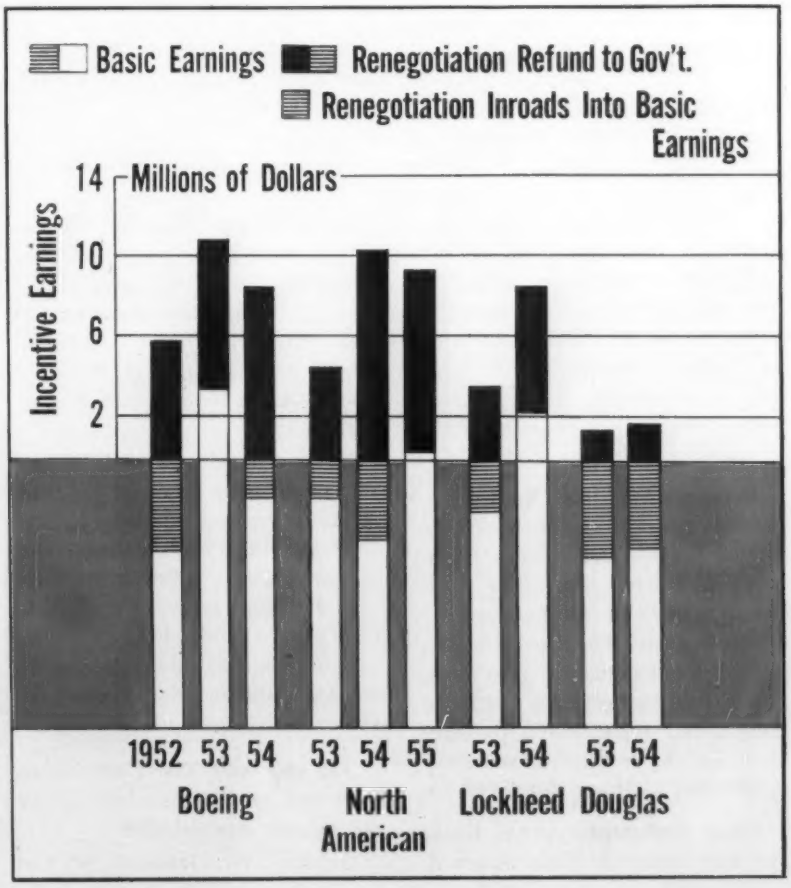
William M. Allen, president of Boeing Airplane Co., pointed out Defense Dept. contracts usually contain incentive clauses rewarding contractors for cutting costs.

Harmful to Incentive—"But," he added, "these incentives . . . have proved illusory. In case after case, the Renegotiation Board, has recaptured profits equal, or in excess of incentive earnings which were within contractual limits. . . . The Board is either challenging incentive earnings as established by contract or challenging basic earnings" . . .

Mr. Allen continued, "This is unfair, destructive of incentive . . . and definitely harmful to the national defense effort. It deprives the aircraft industry of vital financial strength and prevents the Defense Dept. from making use of an effective and important cost reduction practice."

Profits Hit — Another witness, Barron K. Grier, representing the Aircraft Industries Assn., declared

How Renegotiation Hurts



Industry Sounds Off On Renegotiation

"At times it causes reputable companies to walk away from government business because of the lack of incentive, plus time-consuming and expensive record-keeping chores."

"We find that prices are moving lower to such an extent we are bidding on less government work. Federal profit-limiting devices are an obstacle to research, plant modernization, and to financing."

"It is a form of cost plus on a grand scale, where the efficient are penalized and the inefficient rewarded."

"We have the experience of a long-term contract running for four years and having to show the profit in the final year when low costs are present. This is not given defined consideration by the Board. The tax laws themselves specifically allow a fairer carry forward-carry back administration."

"Our experience has been that the government is doing a much more efficient job in its procurement policies—both as to administration and pricing. In fact, the present buyers market has given them a terrific bargaining leverage which they have fully used."

"The bulk of our government contract business is on negotiated fixed price contracts. Our bids on all important contracts during the past two years have been subjected to audit and detailed review before the contract was negotiated."

"The long delays in determining excess profits in any year are a serious hindrance in proper corporate planning, particularly in regard to investments in fixed assets."

—Answers to survey of 250 defense contractors made by the Natl. Assn. of Mfrs.

that during a period of years, renegotiation took away from aircraft companies 26 pct more profit than their aggregate incentive earnings.

"If actions like this are permitted to continue," he added, "what hope does a contractor have of ever being rewarded for unusual efforts in reducing costs?"

Renegotiation Not Needed — Several witnesses pointed out the Armed Services can protect themselves in defense contracting without the crutch of renegotiation.

"In the last 18 years," said a Chamber of Commerce spokesman, "the Armed Services have developed refined and sophisticated procurement techniques which cover every conceivable contract situation."

Other Backstops—Arthur Rock, Hayden, Stone & Co., observed, "Without renegotiation the government's position as a purchaser is protected by powerful forces including: (1) competitive bidding; (2) cost analysis of proposals; and (3) general and specific knowledge of price structure for purposes of comparison."

Defense spending does not necessarily eliminate competition and create a sellers' market, it was testified. The present defense budget would have to move up to World War II budget levels in relation to the Gross National Product before a sellers' market could develop in defense materiel, one witness testified.

The Big And The Little—Both large and small businessmen spoke out against renegotiation.

Gordon W. Jenkins, a Los Angeles aircraft subcontractor, declared, "This is basically a bad law. We think it does away with the incentives to cut costs. It clearly works against the old axiom that 'a penny saved is a penny earned.' When a company saves the penny to increase its earnings, the extra earnings are demanded as refunds.

Discourages Risktaking — "Renegotiation, by concentrating on profit, hits on the very smallest portion of the total procurement bill to taxpayers. It discourages risktaking. It almost forces companies to seek free facilities from the government and ask for contracts that guarantee the reimbursement of all costs sustained."

Mr. Jenkins pointed up the plight of the subcontractor under the existing law: "Renegotiation is a most serious deterrent to economical subcontracting. Major prime contractors are penalized by lower profit allowances when they execute economical subcontracts, instead of in-plant work."

Subcontractors Hurt—"We know this is true because we have seen many cases where prime contractors pulled work back into their plants even though subcontract costs were less than those the prime paid for its own work."

Renegotiation is also a waste of time and money—especially for the small enterpriser in the opinion of Mr. Rock. He noted in companies without management depth it takes top men away from more important problems of research and production. And it nearly always involves high priced legal talent.

C. of C. View—Even if the renegotiation law is allowed to stand its critics want it modified. The Chamber of Commerce believes new amendments should exempt: Contracts resulting from formal advertised bids, contracts containing incentive clauses, and contracts entered into after competitive negotiation. Together with others, the Chamber is opposed to extending the act, as recommended by the Administration, for two years

and three months. Opponents of renegotiation want any extension limited to one year.

While not opposed to extending the Act, the Electronic Industries Assn. believes it should be "amended to accomplish its objectives in a fair and equitable manner."

"Functions of the Board," says the EIA, "should be limited to the prevention of windfall profits."

EIA Recommendations—Specifically the EIA recommended changes to: (1) encourage efficiency and cost reduction, (2) provide for more equitable renegotiation procedures, (3) sweep away secrecy surrounding the Board's determinations, (4) allow appeal from decisions of the Tax Court (which hears renegotiation cases); and (5) consider business fluctuations and their effect on defense contractors.

Aircraft industry representatives supported a bill introduced by Rep. Cecil R. King (D-Calif) which would modify renegotiation by providing a definition of profits not considered excessive under all circumstances, making public information on the Board's decisions, recognizing factors such as financial stability, incentives to efficiency, and economy in the defense industry when reviewing contracts, and by allowing appeals from the Tax Court's renegotiation decisions.

Shipbuilders Protest — American shipbuilders also urged that renegotiation be ended. If continued, they contended, it should at least permit contractors to offset any "excessive profits" in one year by deficiencies in "reasonable" or "non-excessive" profit years. They also recommended profit-limiting provisions on shipbuilding in the Vinson-Trammell Act of 1934 and the Merchant Marine Act be repealed.

The shipmakers contended, the government . . . "should not be concerned with preventing shipyards from making excessive profits, but with creating and maintaining conditions under which they can make any profits at all."

Steel Profits Rise

▪ First quarter steel industry profits, buoyed by soaring sales, pushed sharply past last year's recession levels.

With steel in better demand and customers building stocks against a possible strike, most companies topped first quarter 1958 by large margins. In some cases the steelmakers did better in the initial three months this year than they did in 1956 or 1957.

"Wild" March—Among all the major steel producers in the table below only one—Lukens—failed to improve on first quarter '58 profits.

As a result of the strong sales surge many companies broke production, sales, or shipping records during the January-March quarter. Republic Steel, for example, established a new monthly record for ingot production in March—over one million tons. The previous record was the 941,844 tons produced in October, 1956.

At Jones & Laughlin, the company registered new quarterly records in sales, operating revenues, and steel ingot production. During March alone J&L sold $92 million worth of steel products.

National Steel had record sales of $194 million in the first quarter. Bethlehem and U. S. Steel reported sales and earnings well above those of a year ago, but set no records.

More to Come—In general, steel industry spokesmen are confident the second quarter will be even better than the first. But beyond that point they see the outlook as "uncertain," although the year as a whole should be good.

Steel Earnings—1959 versus 1958

COMPANY	First Quarter 1959	First Quarter 1958
U. S. Steel	$106,585,303	$62,426,679
Bethlehem	49,567,301	24,819,490
Republic	26,844,585	8,583,506
Jones & Laughlin	15,738,000	1,657,000
National Steel	16,504,090	3,801,426
Youngstown Sheet & Tube	11,541,864	3,576,100
Armco	21,152,038	9,330,565
Inland Steel	17,859,090	7,961,147
Colorado Fuel & Iron	4,604,840	1,390,096
Kaiser	3,302,687	2,049,426
Wheeling	4,471,000	505,000
Crucible	3,511,206	172,395
Pittsburgh Steel	1,370,615	968,881*
Granite City	3,465,763	2,055,182
McLouth	4,912,028	454,037
Barium	114,218	422,000*
Allegheny Ludlum	4,549,542	725,900
Detroit Steel	2,568,313	303,678*
Alan Wood	955,264	32,967
Copperweld	1,501,255	112,505*
Continental	1,081,030	580,839
Sharon	590,853	283,213*
Acme	1,849,305	439,827
Carpenter Steel	1,404,335	604,838
Eastern Stainless Steel	679,219	249,001
Lukens Steel	1,008,394	1,470,230

* Indicates loss.

Tough Bargaining Ahead in Steel

Both Sides Are Burning Their Bridges Behind Them

It's like an irresistible force getting set to meet an immovable object.

Labor and management are digging in for a long, tough session.—By Tom Campbell.

1959's Union-Management Crisis

▪ Never before—so early—have steel labor and management been so far apart; or so determined in their stands. As it looks this week only a miracle will prevent a long and bitter strike. This view is based on interpreting steel management's stand and on taking a close look at steel labor's actions and history.

In the past, steel customers and observers have looked with cynicism upon public statements by steelmakers. It was believed that the "inside" story was: A big hassle in the papers, a show of fight, then a settlement. Most of the time such a view was unfair to the steel industry. But it was the general view.

Not So, Now—This year there are few who believe the steel industry is bluffing. Nor are there any solid estimates as to what—if any—settlement will be made; with or without a strike. This week predictions made early in 1957 by The IRON AGE that there would be a strike this year are finding adherents among steel officials, some labor officials, and some long-time national labor reporters such as Abe Raskin of The New York Times.

There are none "in the know" who feel Dave McDonald will back down in his drive for a big wage package. It has been made clear by him and his chief adviser Arthur Goldberg that steel company profits more than suggest that a rise in wages and fringes is in order. Also, it has not been clearly pointed out that if the Steelworkers agreed—which they won't—to a freeze on wages it would represent a potential cut in earnings if the cost-of-living clause is eliminated.

He's on the Spot—It has been argued that the Steelworkers would play it "quiet" this year because there has been so much unemployment. It has been "suggested" that Dave McDonald would not call a strike because it would put him on the hook—and take the Administration off the hook—by adding to the already-dismal unemployment picture. That argument is rather shallow from a labor point of view and holds no water.

But Dave McDonald is on the spot this year. He faces a stronger steel front than at any time in his career. Thus he and his aides might resort to new strategy. One suggestion which is probably slated for the scrap heap—if it ever was considered—is an extension of the steel industry contract. Mr. McDonald's market experts know that for every day the contract would be extended, that much more steel would be piled up to hedge against what everyone seems to feel is a last-ditch battle.

Divide and Conquer?—But labor chief McDonald might entertain the old divide-and-conquer technique

What Steel Labor Wants

The United Steel Workers of America has lined up an impressive list of demands to be made on steel companies in negotiations starting in New York this week.

A program approved by the union's Wage Policy Committee includes:

1. A "substantial" wage increase.

2. Incorporation of the **17 cents an hour cost-of-living** raises under the expiring three-year agreement into the base wage under the new contract. A new cost-of-living clause would be negotiated to take care of future rises in living costs.

3. Either **a shorter work week** or some other device that would spread available work among more workers without loss of pay. In this connection, the union has talked about an extended vacation plan.

4. Improvements in the Supplemental **Unemployment Benefits** program. Idea seems to be to guarantee all workers the benefits specified regardless of whether the SUB fund drops to a dangerously low level.

5. Better insurance and pensions, including a cost-of-living clause for pensioned workers.

6. The union shop, where it is not already part of the contract.

7. More paid holidays and vacations.

8. Better grievance procedures, shift premiums, severance pay, incentives, reporting allowance, seniority, preferential hiring and preservation of job rights upon lay-off or when plants or departments are discontinued, etc.

with a few modern touches thrown in. The "Big Twelve" steel firms are practically negotiating as a unit. Thus if Dave struck one (or three) it could be assumed that all would go down. That would mean the other steel firms would have to decide if they were going to remain open.

If they shut down, chances are most state rulings would provide for unemployment payments for those "locked out." All steel firms have notified the union that the contract is "out" on June 30. Thus steel firms are free of their contract after June 30 unless a new one is agreed upon. Dave must have been thinking about the divide-and-conquer tactic because rumors about contract extension have been widespread. But the rumors may have missed the possibility that contracts might be extended for some but not for others.

Sharing the Loss — If by any chance some steel companies are struck and others remain open, steel firms have an answer: A mutual assistance proposal. Provision has been made to put into operation something similar to the recent airline plan: Airlines which operated while others were struck coughed up a percentage of their revenue to the lines that were shut down.

Also, if Dave attempts to split the industry — which won't work anyway—he will have to make known his plans at least a week before June 30 because all steel plants have to start taking furnaces off at least three or four days before the deadline to protect against possible damage.

No matter how you look at it, both sides have greatly restricted their bargaining room. And the government has tightened the screws further.

From here on in, it will be a three-cornered fight. The government is in too deep now to pull out and let "normal" collective bargaining take its course. At one time or another—either before or after a strike—it will have to make a decisive move.

Ore Pinch Ahead?

Stockpiles Are Falling Fast

Record blast furnace production is whittling down ore reserves faster than most users anticipated.

Ore itself is plentiful, the real problem is one of logistics. A shortage may be coming in the second half.

▪ Quite a few blast furnace operators turning out all-time record tonnages of hot metal are looking with some concern to their ore stockpiles.

While no real crisis is in the making, the ore is being eaten up at a record-breaking pace too. There have and will continue to be individual company emergencies, mostly in having a specific grade at the right time and place. For example, some pre-season tonnages of pellets and other special grades have been sent this year from Minnesota and Upper Michigan by expensive all-rail to the Chicago district.

Last-Half Planning—While mills are now pushing the miners and boats for delivery before labor contract time, the real concern is for the latter part of the year. With a long strike and high steel operating rate, something of a bind is possible.

While a strike would slow down the ore consumption, if steelmaking stays high through the winter, it could be a definite transportation strain. Ore itself is a glutted market but logistics is the big problem. Distress concessions are actually being offered on tonnage in the U. S.

Higher Yield—Stockpiles of ore, which looked embarrassingly high through the winter, are being rapidly eaten away. Blast furnace production hit an all-time high of 7.5 million tons of iron in March. Much is due to unprecedented yields from sintering plants, pelletized ore, and other enrichment methods plus new techniques.

This pushed ore consumption (U. S. and Canada) for the first quarter to 32.5 million tons compared to 22.2 million a year ago. So stocks on hand also dropped to 44.9 million where they were 53 million the year before, according to figures of the American Iron Ore Assn., Cleveland.

Fleet Near Capacity—The Great Lakes fleet, however, is rapidly getting out in full strength to rebuild it. About 235 of the 246 total fleet of boats will be under way soon compared to only 180 maximum last year. And a small scale invasion down the St. Lawrence Seaway from Labrador is also expected.

The Great Lakes fleet will haul down about 25 million tons in May and June. About 15 million tons will be eaten up so there will be a net gain of 8-10 million tons in the district. With April shipping and consumption about a stand-off, mills would resume operations after a strike with about 55 million tons on hand.

Estimates for a 75-million-ton-year on the Lakes still seem valid although a strike of more than six weeks could cut into the figure.

Import Picture—For the long-term view, a brisk business during 1960 seems to be in the offing despite considerable foreign competition.

Foreign ore's share of the U. S. market went up again in 1958 to 25 pct of the total. In 1957 it was 22 pct and in 1956, 19 pct.

Heavy ice in the Great Lakes this year postponed opening date of the shipping season by two weeks. And a steel strike would tie up the boats at the height of their season. A long strike could force them to push ice well into November.

Vacuum Melting Moves Ahead

Demand for Quality Encourages Industry Growth

More companies are moving into the vacuum melting field. Capacity exceeds 180 million lb.

Market outlook is fluid. Missiles take up slack caused by jet plane construction lag.—By G. J. McManus.

▪ Vacuum metals moved forward and more clearly into focus over the last two weeks with the unveiling of new melting facilities.

In rapid succession Vanadium-Alloys Steel Co. and Latrobe Steel Co. took the wraps off new consumable electrode vacuum furnaces, both in the Latrobe area near Pittsburgh.

German Development—Part of a $3.5 million program, the Vanadium-Alloys furnace will produce up to 4 million lb a year. It employs a German-developed system of arc control and a pumping network designed for nearly complete vacuum. Ingot diameters can range from 9 in. to 24 in.

Latrobe Steel's furnace was designed and installed by Lectromelt Division of McGraw-Edison Co. It is of the basic type pioneered by Allegheny Ludlum and widely used for both titanium and iron-based metals.

Capacity Grows—Startup of the two furnaces brings vacuum melting capacity in this country to more than 180 million lb. Of this amount roughly 60 million lb. represents titanium furnaces; 85 million lb is for consumable electrode melting of steel and 24 million is for induction vacuum melting of steel.

In addition there is Firth Sterling's consumable electrode facility, which remelts under a slag.

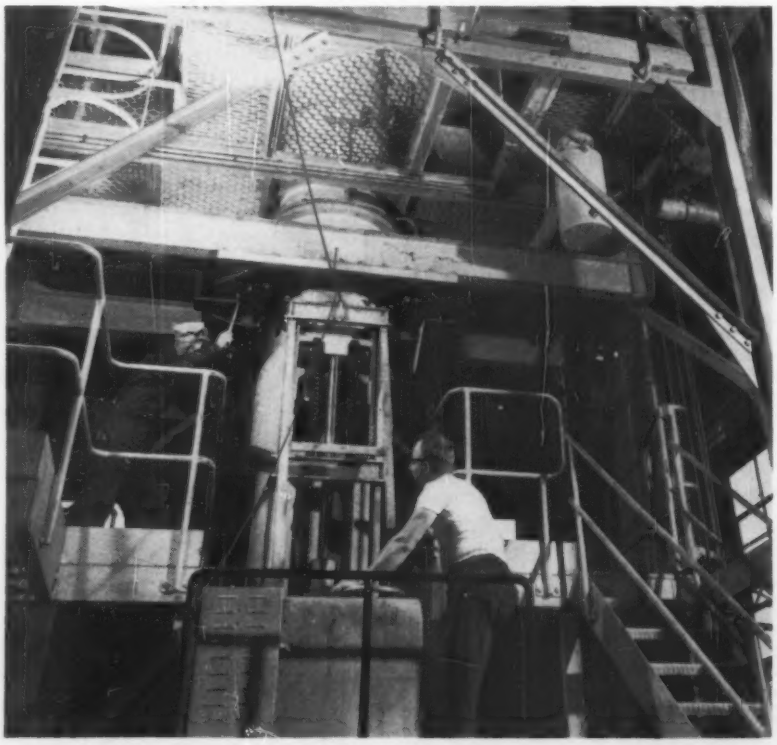
Market Outlook — For the different vacuum processes, the market outlook is fluid. Induction melting was initially used for the nickel base and cobalt base alloys going into the most critical jet engine parts. With the advances in engine design there has been an upgrading of materials.

Consumable electrode furnaces were used initially for the iron base alloys going into jet engines—particularly for turbine disks. New alloys and the lull in jet construction have clouded the outlook.

Missiles Take Up Slack—Much of the slack has been taken up by demand for alloy steels for missile motor bodies. In addition consumable electrode steels are being used for bearings and missile structural parts. Tool steels for landing gears could provide a big market.

Some producers feel the ultimate answer will be a combination of induction and vacuum melting.

Behind Industry Growth—All of which adds up to a large chunk of vacuum melting capacity for a market that has been painfully erratic in recent years. The big application for vacuum metals has been in jet engines. Producers were hard hit when the brakes were applied to plane production in 1957. There has been some recovery since then but the outlook seems to be for manned aircraft to give way to missiles.



NEW FURNACE: This is Vanadium-Alloys Steel Co.'s new consumable electrode vacuum melting furnace. Vacuum melting capacity is growing nationwide.

The Payload's the Thing

GOES ANYWHERE: A road is a luxury to this giant truck built by Automobiles M. Berliet, Lyon, France. The Berliet, T-100, used for exploitation of inaccessible areas, will carry up to 100 tons. It is 16 ft wide and 41 ft long. Tires, designed and built by Goodyear Tire & Rubber Co., are eight ft in diam. The truck is powered by a 600-hp, turbo-diesel engine. The cabin seats five, sleeps two, is air conditioned, and includes a cooking range, water tanks, and a two-way radio. Steering, brakes, and gear shifts are powered operated.

French Steelmaking

French steel companies turned out 14.6 million tons in 1958, making France the fifth largest steel producing country in the world.

Output in 1954 was only 10.6 million tons. In 1946, right after the war, it was only 4.4 million tons.

By 1961, according to the third Equipment and Modernization Plan of the industry, output should hit 18.5 million tons.

More Oxygen Steel For J & L

Jones & Laughlin Steel Corp. plans to install two basic oxygen vessels and a blast furnace at its Otis Works, Cleveland.

The new vessels will be rated at 135 tons, with an annual capacity of 1.2 million tons. They, and the blast furnace, are to be finished in 1961. They will cost about $50 million.

Expansion Plan—The Cleveland project is part of a three-year $234 million spending program at J&L. Of the total, about $165 million has already been budgeted.

The other $115 million will cover a new electrolytic tinplate line, a continuous annealing line, coke ovens, sintering plants, openhearth improvements, and ore beneficiation.

New Phoenix Mill

Preliminary arrangements in connection with expansion of Phoenix Steel Corp., formerly Barium Steel Corp., are nearing completion. The company plans to construct oxygen steelmaking equipment, a blast furnace, and other facilities near Burlington, N. J.

Estimated cost of initial phases of the project has been cut from $50 million to $40 million, according to J. A. Sisto, chairman. Three groups, including one American, one British, and one German, are interested in the program.

Management is expected to decide within 60 to 90 days on which will be selected. Meanwhile, further checks are being made on cost.

Stainless Expansion

U. S. Steel has some plans on the fire that will improve its position in stainless steel.

A new 37-in. Sendzimir mill is now operating at the corporation's Cleveland works. It will turn out stainless steel strip in ultra-thin gages at close tolerances.

National Tube Div. plans to nearly double the stainless tubing capacity at its Ellwood, Pa., works. Two new buildings will house new processing, finishing and testing equipment.

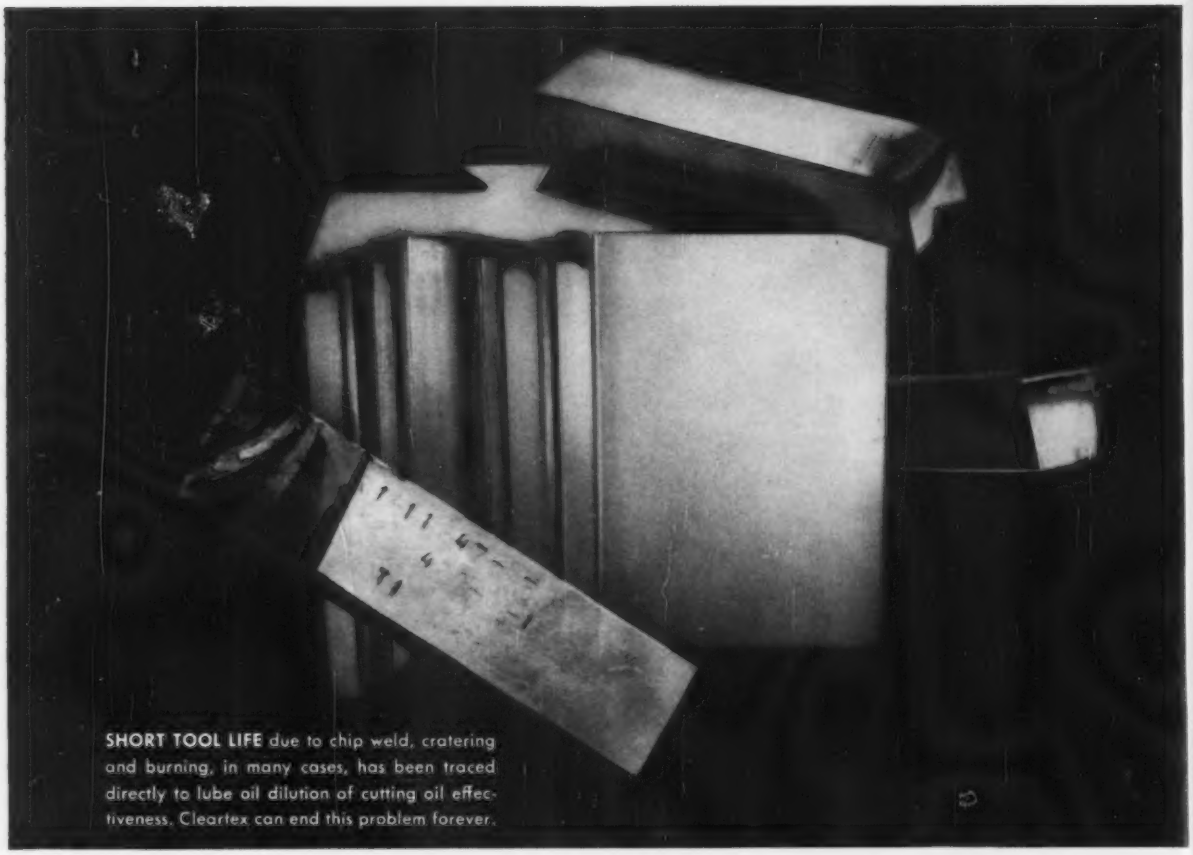
Scovill Opens New Tube Mill

Scovill Mfg. Co., Waterbury, Conn., one of the country's largest independent brass mills, has officially opened its new $10 million tube mill at New Milford, Conn.

The company will now expand its line to include copper tube and pipe for plumbing, heating and air conditioning.

Modern Machinery—All of the equipment in the new Scovill mill is among the most modern of its type. The drawbench is claimed to be one of the longest multiple position units ever built, and can draw up to 200 ft of copper tube in straight lengths. Tube elevators at the draw benches is a Scovill innovation to cut the need for crane service.

The plant also has the only twin-reversible type bay transfer conveyors in existence, says Scovill.



SHORT TOOL LIFE due to chip weld, cratering and burning, in many cases, has been traced directly to lube oil dilution of cutting oil effectiveness. Cleartex can end this problem forever.

Diluted cutting oil shortens tool life drastically

Lubricating oil is probably leaking into the cutting oil sumps of your automatic screw machines as you read this. Current research proves that this is happening in 70% of all the automatics in use today! And where it happens, it shortens tool life by as much as 50%—even 70%. On top of this, the cost of extra regrinds, lost production during tool changes, and excessive scrap production is putting a premium on screw machine operation in too many shops.

Look for these symptoms. One sure sign of dilution is the need for frequent refilling of the lube oil sump. If you are using an ordinary lube oil, this dilution will create two additional—and more costly—symptoms: excessive scrap production and frequent regrinds. Now you can eliminate these forever with the

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The exceptional chemical stability and load-carrying ability of Texaco's Cleartex series make them equally suitable for use as cutting oils, lubricants or hydraulic fluids. All you have to do is use them for both cutting *and* lubrication. With Cleartex in *all* your sumps, you'll find cutting oil dilution will stop and screw machine production cost will drop substantially.

Write today for your copy of Texaco's helpful new booklet "Cleartex in Automatic Screw Machines"... and contact your local Texaco Lubrication Engineer for an authoritative survey of your automatics. Just call the nearest of the more than 2,000 Texaco Distributing Plants, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y. Dept. 1A-FM-21.

LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

Robert B. Young

'Father' of the Titan Missile

Five years ago, the Titan ICBM was a dream on a drawing board. Today it's a reality.

Here's the man who had the tough job of translating the idea into working hardware.

ROBERT B. YOUNG: Bigger rocket engines for bigger payloads.

▪ In a business where "a few seconds can change you from a bum to a hero," Robert B. Young is a hero—although something of an unsung one.

Recently named vice president, Aerojet-General Corp., he is the engineering brains behind the Air Force's Titan intercontinental ballistic missile. That was the missile which was launched successfully at Cape Canaveral last Feb. 6, on its third attempt.

Critical Countdown—In the first two launching tries the Titan failed to leave the pad. During the countdown on the third try Mr. Young felt like Casey stepping up for his last swing. But he didn't strike out.

The 90-ft Titan belched fire, rose from the ground with a roar, and arced gracefully over the Atlantic firing range for 500 miles. Robert Young was a hero. His faith in liquid fuels paid off. And the Titan entered the select group of missiles that are likely to play an important part in defense plans and future space probes.

Liquid Engine Man—Mr. Young is convincing proof that the U. S. can produce its own brilliant rocket scientists. At 41, he is a 16-year veteran in the science of rocketry. He ranks with the more highly-publicized alumni of the German V-2 rocket school.

Strictly a liquid rocket engine man from the start, Young joined Aerojet in 1943 at the age of 25, as an assistant project engineer on a job developing a liquid JATO rocket for the Navy. Since then he has been associated with many of the company's projects in liquid engines. These include developmental work on the Aerobee sounding rocket, Nike, Bomarc, and Titan.

The Future — "For so-called space exploration as we envision it, liquid rockets are going to play a dominant role," predicts Mr. Young.

As for the use of liquid rockets for terrestrial applications such as rocket-powered planes, he says:

"It will be a long time before jet plane transportation will be replaced by anything faster, largely because of the problems you have in slowing down rocket propelled vehicles."

Getting Started—A native of Los Angeles, Mr. Young attributes his lifelong interest in engineering to his father, a businessman who had a keen sense of mathematics. "I was going to be a civil engineer," recalls Mr. Young. But he was talked out of it by a civil engineer friend who warned: "You'll starve to death." He enrolled at California Institute of Technology and majored, instead, in mechanical engineering.

How a leading automotive manufacturer Snyder-izes for the Soaring Sixties

HOLDS PISTON WEIGHTS ± 2 GRAMS AT 600 PER HOUR

This Snyder transfer machine automatically weighs die cast aluminum pistons and mills them to tolerances of ± 2 grams at double the rate of the previous method. Here's how it turns out 600 parts per hour:

Pistons are transferred bottoms-up to orienting station.

Pistons are oriented in relation to the wristpin hole offset.

Pistons are spun right side up (below at right) while they are advanced to weighing station.

Precise overweight is transmitted by memory system to weigh-mill station during transfer.

A 3¼" milling cutter removes excess with the piston clamped in position.

Gaging station re-weighs pistons to check weight. Deviation from part tolerances stops machine.

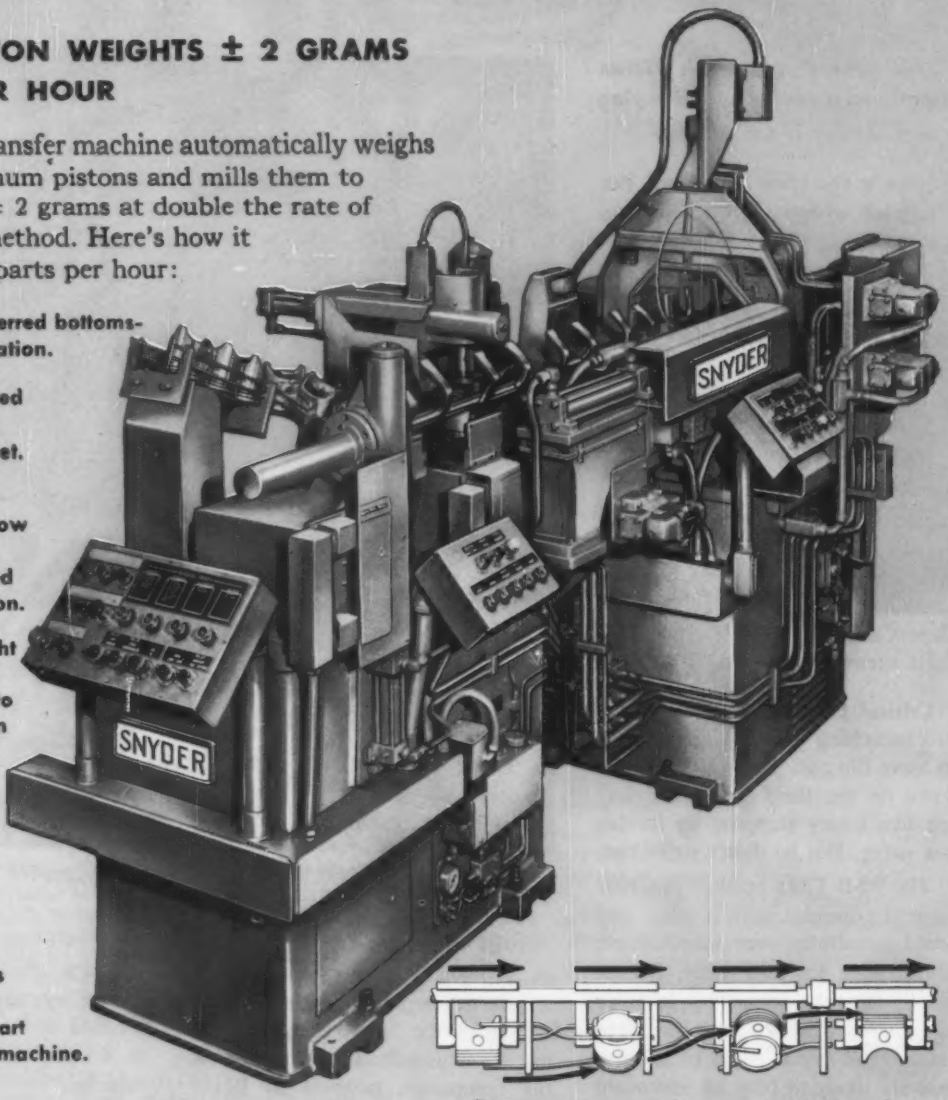

Diagram shows end over end rotation of piston as it passes through spiral rails.

Do your manufacturing cost problems revolve around parts handling, gaging and assembly as well as machining? Ask us to show you the benefits of SNYDER-IZING FOR THE SOARING SIXTIES. For a resume of SNYDER special machines engineered for profit opportunities, send for our new brochure or phone.

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The Facts on Steel Pay Demands

It may be true that most steel workers put security foremost in their list of desires.

But that won't make a contract settlement any easier. Union leaders have set high goals in both wage and security demands.

▪ Don't build up your hopes on the basis of the survey purporting to show that most steel workers would just as soon forego a wage increase this year.

Apart from momentary embarrassment and chagrin, the survey will have absolutely no influence on the leadership of the steel workers' union. It will press just as hard this year as in the past for a "substantial" wage increase.

It couldn't be otherwise.

Union Democracy?—The United Steelworkers of America makes a great show of "democracy" within the union. But, of necessity, it's a limited democracy. The union leadership makes the final decisions, not the rank-and-file. Otherwise there would be chaos.

The survey was probably true, as far as it goes. But the surveyor didn't go far enough in relating the sentiments of the workers interviewed to the long-term objectives of the union. So the results, as published, while true, raised false hopes in that they were not properly interpreted.

Greatest Ever — Witness last week's action of the union's Wage Policy Committee and David J. McDonald's assertion that in the negotiations starting this week he will fight for "the greatest contract ever" from the steel industry. The Wage Policy group laid down a list of demands as long as your arm.

This is a paradox. But it's an explainable paradox.

If the same survey had been made prior to previous contract negotiations, the result probably would have been the same. And it could be safely predicted that a future survey would return a similar result.

The fact is that the individual steel worker is in "the middle." He wants a better standard of living through higher wages and more so-called fringe benefits. At the same time, he hates the thought of a strike and the consequences to himself and his family. Still, he's loyal to his union. And when the chips are down he'll accept the decision of union leaders. Actually, he has no real choice in the matter. These are the facts of union life.

Business Reaches a New Plateau

▪ Do you recall the "plateau" of 1956 and early 1957 when business remained steady at a very high level?

The very same thing is likely to occur in the next year. There will be fluctuations due to seasonal factors or strikes, but it looks like business is in for a steady period.

Capital Goods Outlook — But here is something to keep in mind. The next upsurge in capital goods spending may come earlier than expected. Give businessmen six months more of top level business, with a solid basis in the durable goods sector, and you will see big increases in outlays for new plants and equipment.

Emphasis is not likely to be on total expansion of capacity. Instead, it will be on replacement of obsolete facilities with more efficient, and profitable, equipment.

New Viewpoint — Businessmen will look at it this way: With a period of strong demand likely to extend a year or more, they will start looking over marginal equipment that isn't operating as efficiently as it should. Or, worse yet, competitors' facilities that are yielding a better profit than their own.

In many ways, the business picture is better than it was in 1956. At that time, it was recognized as a capital goods boom with an uptrend in heavy durables needed to sustain it.

That is not the case now. The high level of business has a much broader base of consumer demand. It's likely to sustain itself for many months. And if it should generate a new capital goods boom, all the old records could go.

Orders Keep Climbing

Along that line, manufacturers' sales and orders continue to increase, but at a slightly slower level. This means that the leveling off may already be in process.

New orders in March, as tabulated by the Dept. of Commerce, hit $30 billion, compared with $29.7 billion in February. New sales reached $29.1 billion, a rise of $600 million in the month.

Backlogs continue to climb, but so do inventories. Most of the gain in backlogs occurred in the durable goods sector.

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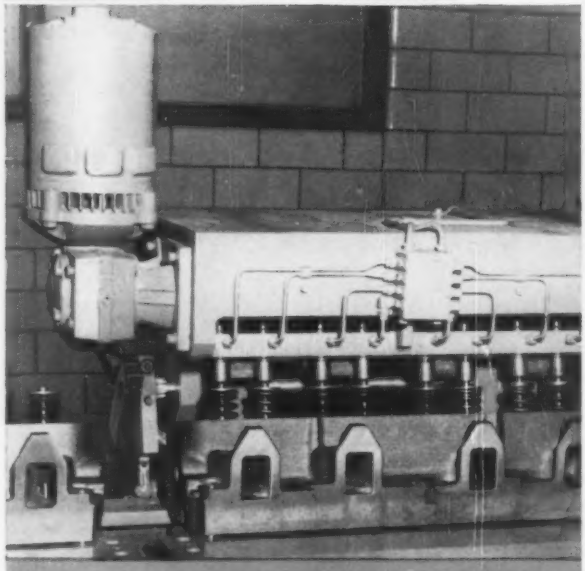
NO DOWNTIME for motor repairs. The standard end-mounted motor on BOSTON Gear RATIOMOTORS is easily detached by removing the bolts holding the motor to the gear unit flange. A spare motor can be attached, and operations resumed in a *few minutes*. Gear unit remains undisturbed, preserving alignment.



BOSTON Gear Vertical Right Angle **RATIOMOTOR** drives the valve "popping" (final test) unit in a giant 29-station transfer machine for continuous automatic assembly of cylinder heads.

BOSTON Gear Horizontal Right Angle **RATIOMOTORS** drive magnetic belts which convey parts from lower storage bins to vibratory hoppers at start of 13-station, automatic assembly of roller skate wheels.

BOSTON Gear RATIOMOTORS are the leading choice for all types of installations where downtime would be disastrous to production schedules. One reason is BOSTON Gear quality standards, which assure highest efficiency and extra service life of the gear unit. Another is BOSTON Gear design leadership like the detachable motor which permits continued operation with a spare, avoids downtime. Design around BOSTON Gear RATIOMOTORS for this *double* insurance against downtime. All types and ratios are *standardized stock* models, quickly available anywhere from over 100 BOSTON Gear Distributors. Boston Gear Works, 72 Hayward Street, Quincy 71, Massachusetts.

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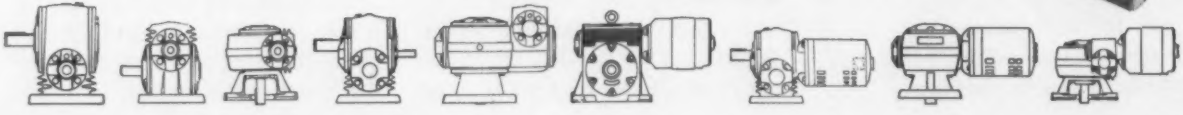


CERTIFIED? Hotpoint Range's E. J. Kincaid, quality control manager, right, and George Diamond, quality control engineer, purchased parts, discuss possible certification of part producer.

Evaluate Your Vendors to Cut Incoming Inspection Costs

Vendor certification program at Hotpoint Range cuts inspection costs, shows indirect benefits.

Vendors also gain through close relationship with buyers at Hotpoint. Other GE divisions are studying the plan. — By K. W. Bennett.

▪ Are your costs of inspecting incoming parts and materials running high? If they are, it means you are shouldering the inspection costs of your vendors.

You can cut inspection costs in your own plant, and also reduce the manufacturing costs for vendors who supply you. It sounds difficult, but it's being done.

Who's Certified?—Hotpoint Co., Division of General Electric, has made major progress in cutting incoming inspection costs at its Range Div. by a system of "vendor certification." It has paid off to the point where it is being studied by other GE divisions toward possible adoption.

Here's how Hotpoint Range "certifies" its vendors. If they deliver 30 consecutive lots of material that pass incoming inspectors, these vendors are certified. Their names go up on a big board over at the purchasing department. These certified vendors will get first call for any new purchases Hotpoint makes.

Results Show—It sounds as simple as awarding a Boy Scout merit badge, but here's what it does:

Hotpoint has reduced by 75 pct the material on its receiving docks awaiting incoming inspection.

Direct incoming inspection costs have been cut to not much over 35 pct of the 1956 figure, when

Vendor Certification—

What Can It Do For You?

It reduces in-plant inventory.

It cuts production line slowdowns.

It reduces reject paperwork.

It boosts quality in rush periods.

It cuts supervisory involvement with rejects.

It reduces vendor reject costs.

It boosts vendor quality consciousness.

Hotpoint Range was a much smaller plant.

The incoming inspection force has been reduced from six men, a supervisor, and a clerk to two inspectors. The supervisor is no longer necessary. The one clerk who handles records on inspection of incoming material devotes only 25 pct of her time to this job.

Indirect Benefits—Indirect costs are slashed. For instance, in a rush period, before "certification," it was common to see diecasting rejects spurt from 2 pct per lot delivered, to 6 pct. Figure it out. This would mean an increase of $100 per lot in paperwork costs alone. Add to this the unmeasured cost of lost supervisory time, shutdown machines, and workers idled by a stoppage in the flow of parts to assembly lines. Rush season or slack season, rejects can now be held at 2 pct.

Indications of indirect savings have been so widespread that Edward J. Kincaid, manager, quality control, Ranges, and author of the original plan, has been authorized to do a survey of indirect savings. This seems a probable prelude to use of the certification program in other plants. It appears that at least two General Electric plants are moving into the program.

Plan Outline—Briefly, a vendor is given a rating on each of 10 lots of goods he delivers. At the end of each 10 lots he is told what his rating is. A perfect lot gives him 10 points. A reject in a lot brings the vendor a pink slip. His score is reduced for each imperfect lot.

After 30 lots of 10-point material, he's certified. His shipments are only checked monthly, unless in-process inspection by Hotpoint indicates he's sending sub-quality parts.

Quality Assured — As a result, Hotpoint knows it's getting quality components. In-plant inventory can be cut to the bone. In-plant rejects have been reduced so sharply that "over-cribs," the storage areas for reject parts discovered at the assembly line, have actually been reduced in size even though incoming inspection of these parts is almost (for certified suppliers) eliminated.

Shutdowns of the line because of an artificial parts shortage are virtually unheard of. For instance, Hotpoint Range operates on a "flow" schedule. Purchased parts move immediately from the unloading dock to the assembly line, where this is feasible. If a defective lot of material from a vendor arrives at the loading dock, or if the bad lot passes the loading dock and arrives at the assembly line where it is fed into the line, a shutdown of the line becomes necessary immediately in a "flow" operation. But certified vendors are delivering at a high quality level, and shutdowns just don't occur.

Vendors Listed—Thomas White, manager of materials, production control, is the second key figure in the certification program. He oversees buyers who rate Hotpoint vendors on service, price, delivery, and, first and foremost—whether that vendor is certified.

A list of certified vendors is prominent on the wall of his department. Visiting vendors learn immediately who the certified firms are. Conversely, one of his buyers need merely glance up at the wall to learn whether a firm has done a good enough job on quality control to rate as a certified supplier.

Products Stamped—Once certified, the vendor is given a "Flying H" stamp. When a lot of his goods, bearing the stamp, is received at the incoming freight dock, handlers and two inspectors check for the stamp. Handlers move material bearing the "Flying H" directly to the assembly line without inspection. The inspectors concentrate only on unlabeled material.

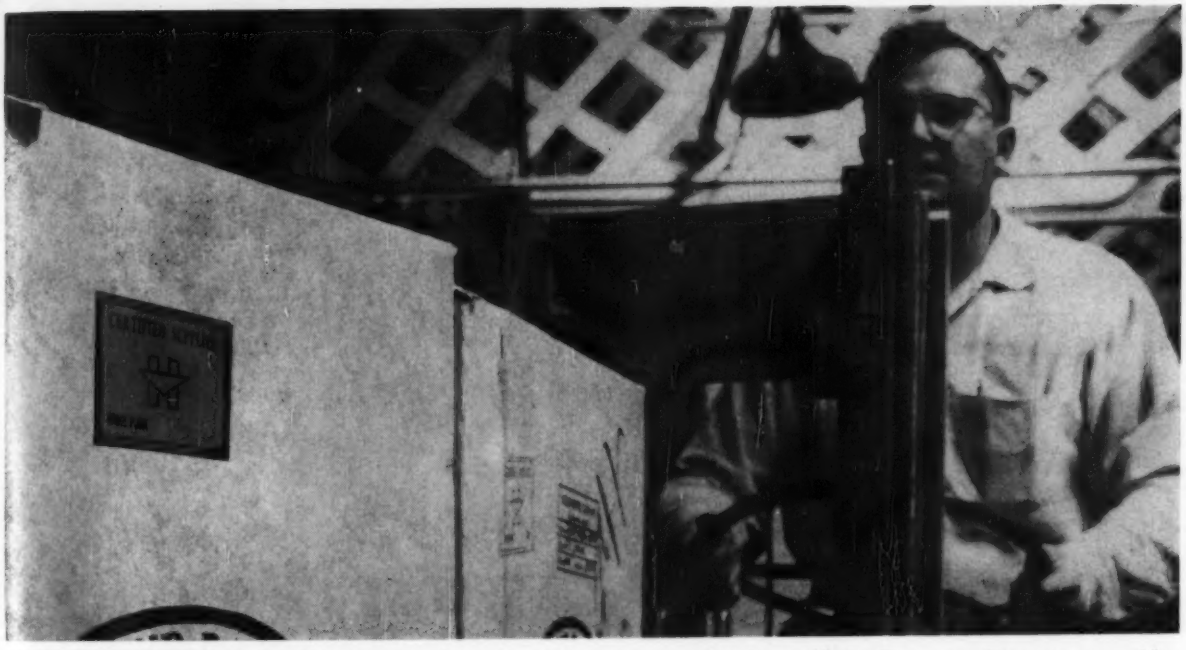
Certification is a going program, depending for its success on teamwork between production control, and quality control.

Any vendor to Hotpoint Range knows he must bid for business against competitors among the 64 firms now certified. At least 112 firms are working toward certification.

Does the high quality requirement discourage potential vendors? On the contrary, membership in the certification list is becoming a mark of distinction. Vendors call to demand why they didn't get a perfect score after they've shipped only 10 lots.

Vendor Aid—How does the program help the vendor?

1. On entering the program leading to certification, he'll be given a Hotpoint inspection manual. It tells him how his shipments



NO INSPECTION: "Flying H" stamp on incoming box means vendor is certified. Parts go direct to assembly.

will be inspected, how they'll be rated, how he can avoid rejects. It classifies defects, and even gives him inspection sample sizes.

2. A Hotpoint quality control man will visit his plant, tell him where his equipment or techniques might cause him a problem in meeting Hotpoint quality requirements.

3. He'll visit the Hotpoint Range plant, watch inspectors at work. He'll learn what they're watching for, and get some idea of where his problems might arise.

4. He'll contact a product engineer. The two of them will inspect blueprints of the part he'll manufacture. They'll iron out cost-boosting tight dimensions, since the blueprints are often "loose" at this stage and can be modified.

When full agreement is reached, the product engineer signs and dates copies of the blueprint. The vendor has a signed, dated copy of the final blueprint. If changes are demanded after he's begun production, he has signed evidence that he was working to the original blueprint.

A new device: Hotpoint Range supplies drawings of parts showing areas of the part where high dimensional tolerance is required or areas where tolerance requirements aren't as stiff.

5. The vendor submits sample parts before production begins and before his tools are hardened. Sample parts are delivered unfinished (no plating, no paint) but must be from completed tools. Paint samples are submitted separately.

6. If the vendor is already producing parts, but is doubtful of the quality of part of a run, he can call in Hotpoint inspectors to examine this lot of parts before he ships it to Hotpoint Range. He'll spare himself rejection costs, and protect his rating in the certification program. He may find the Hotpoint inspector will okay the part and it can be shipped with a special "quality audit" form attached. Hotpoint's incoming inspectors will check the material.

7. Using his inspection manual, the vendor can take advantage of this large company's advanced sampling techniques. He's told what samples are necessary for optimum inspection, what defects are or are not allowed. The vendor's own inspection department may be given a shot in the arm that can't hurt his relations with other buyers.

8. In producing a series of lots, a vendor may accumulate a few parts of marginal quality from each lot. If he feels Hotpoint Range might accept them, he can send these in a special lot, consigned to the Manager of Quality Control, Hotpoint Range plant. Again, if the parts are unacceptable, they won't affect his certification. If they are passed, he will have saved himself scrap losses.

The Hotpoint Range program is simple, low on paperwork and high on cost reduction. Just how much cost it has wiped out isn't yet clear, but even a partial analysis of savings indicates they are extremely high.

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Galvanized Sheet to the Rescue

Automakers Will Use More to Fight Corrosion

Modern cars have more areas where rusting is a worrisome problem.

Galvanized is in good spot, although "bugs" must still be worked out.—By H. R. Neal.

▪ How do you keep cars from rusting out in a relatively short period of time? It's a question that has been perplexing the automakers for a long time. But it has become more critical in recent years.

So, automakers are exploring the possibility of using galvanized steel in many critical areas where rust is a problem. Currently, only a relatively small amount of galvanized steel is being used in automobiles.

Rust Breeding Spots — Modern cars are built with more closed sections and box members than previously. Despite drain holes, moisture has a tendency to collect in these areas. It's even more of a problem in cars built with unitized construction. Increased use of salt for snow removal from highways tends to aggravate the condition by increasing the corrosive nature of the moisture trapped in various sections.

Chrysler uses the coated steel for window regulator arms, inner parts of headlights and taillights, and a few other parts. Ford and General Motors use it for headlight housings. It is also used in varying amounts for mufflers.

Use Will Grow—But the automakers, Ford and General Motors in particular, are seeking ways to use a lot more galvanized steel in their 1960 and 1961 automobiles.

Ford, for example, is planning to use it for the floor pan for its small car and for rocker-panels (door sills) for its larger cars. General Motors has similar ideas, with the possibility of galvanized steel being used for floor pans in all GM cars.

But Problems Lie Ahead—But not all of the problems leading to wider use of galvanized steel have been solved. GM's Fisher Body Div., which makes the bodies for all GM cars, wants steel coated

---

Truck That Acts Like a Boat

LAND OR WATER: This new aluminum truck may save the U. S. Army a lot of bridgebuilding. Designed and built by Chrysler Corp., it weighs less when loaded than does a regulation 2½-ton military truck when empty. Reynolds Metals provided the aluminum know-how.

with zinc on only one side — if possible. This can be had with electro-zinc coated sheets, but the coating isn't heavy enough to provide the proper corrosion resistance in the applications under consideration.

So, Fisher is experimenting with "differential" galvanized steel. This is hot-dipped in the regular manner, but a metal blade and asbestos wiping arm remove most of the coating from the underside of the strip as it leaves the dip tank. This reduces, but doesn't eliminate, the production problems associated with the fabrication of galvanized steel.

Welding Is One—Welding is still a problem, though not nearly so great as with fully-coated material. In welding operations, the welding tip is placed against the side of the metal with the least coating. However, it takes a hot weld to burn away the zinc on the fully-coated side in order to obtain a good bond between welded surfaces. And there is still an unwanted buildup of zinc on welding tips. The combination of zinc and copper tips in effect turns the tips into brass after a while, necessitating frequent maintenance.

Fisher engineers are said to be seeking a way to prolong tip life on welding guns to 4 hours before maintenance, and the minimum acceptable life is said to be 2.5 hours.

Painting Is Another—Paint adhesion is another problem connected with the galvanized steel, although the wiped side of differential galvanized is said to provide a much better bonding surface than the fully-coated side.

In production of parts, the different drawing characteristics of galvanized steel will have to be considered, but this is not considered much of a problem.

Supply Is Questionable—However, there may still be another obstacle in the way of widespread use of galvanized steel by the auto industry. Industry sources point out the possibility of a shortage of hot dipping capacity. In the past few years, they say, as soon as a new line has been installed the production has been gobbled up.

At the present time only one steel company is producing differential galvanized steel in any quantity, although several others are experimenting with it. Several mills are reported considering or planning additional galvanizing capacity. However, the reports say, these couldn't be in operation much before 1961.

GM Arranges Source — In the case of GM, a steel industry shortage of galvanizing capacity might not be too much of a problem. There are persistent reports from industry sources that the automaker has made an agreement with one steel supplier—not presently making galvanized sheets—to act as its primary source.

Another anti-rust measure well along the way is zinc-rich paints—containing 60 to 70 pct zinc. These will be used to paint inside channels of frames, door pillars, inner surfaces of doors, and other areas where salt and moisture are often trapped.

Average Car Use—One source estimates there may be as much as 30 pct more zinc used on the average car next year. Current industry average is about 61 lb per car, ranging from a high of about 92 lb on Lincolns to a low of 28 lb on Plymouths, according to American Zinc Institute.

The zinc-rich paints could add 8 to 10 lb more zinc. And several more cars, including Oldsmobile and Pontiac, will return to zinc diecast grilles on 1960 models.

Automotive Production

WEEK ENDING	CARS	TRUCKS
May 2, 1959	119,739	26,290
Apr. 25, 1959	133,987	26,987
May 3, 1958	78,434	17,817
Apr. 26, 1958	58,664	16,204
TO DATE 1959	2,206,101	428,661
TO DATE 1958	1,585,901	308,151

*Preliminary Source: Ward's Reports

The Bull of the Woods

BLAH! SIGN A BOOK FER A CHEW OF T'BACCER? BAH--WHUT'S THIS COUNTRY COMIN' TO?
WELL, LISTEN-- TH' GOVERMINT WON'T TAKE YOUR WORD FER NOTHIN' ON THE INCOME TAX! YOU GOT TO SHOW 'EM, 'SPECIALLY ON THIS CHARITY STUFF!
IS THAT GUY TRYIN' TO DISCOURAGE BUMMIN', ER DOES HE REALLY PUT THAT INTO HIS INCOME TAX?
AW, HIS WIFE THINKS HE'S SPENDING TOO MUCH MONEY, AND HE HASTA KEEP A RECORD-- BUT IT'S JUST AS BAD AS THE INCOME TAX!
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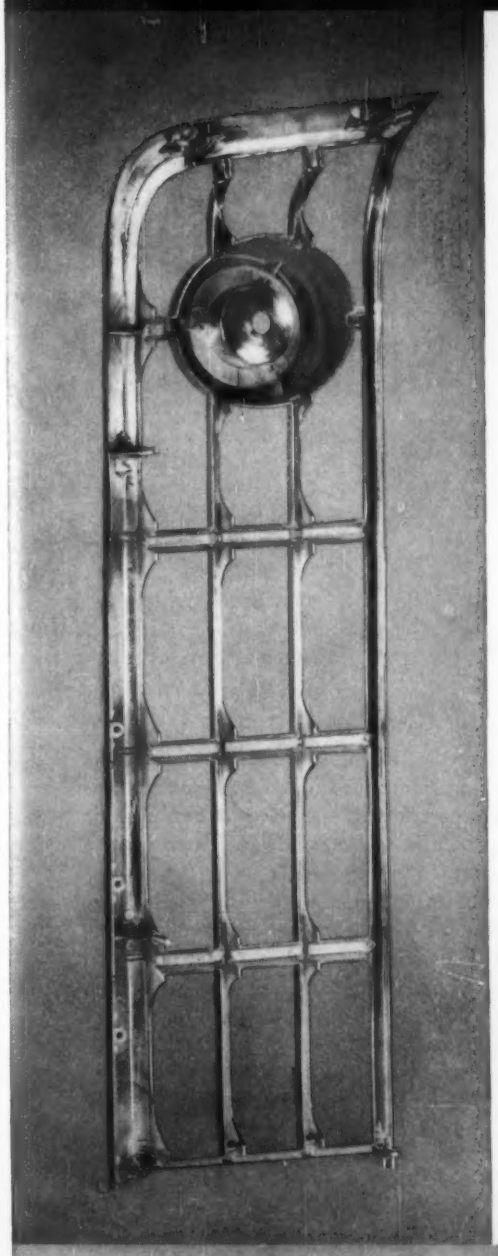

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Kennedy Labor Bill in Trouble

It's Possible It May Die in House Committee

Labor Committee Chairman Barden is known to favor much stronger labor legislation.

He may sit on the Kennedy bill in hope of getting something stronger next session.—By G. H. Baker.

▪ Labor reform may be headed for oblivion.

Despite earnest pleading from Ike and Sen. McClellan (D., Ark.), for a clean-up bill with guts, Senate leaders claim the mild Kennedy bill will "do the job." House members, as a result, must take the Senate-passed Kennedy soft-reform bill or no reform at all this year.

Although it's too early to call the shots accurately, it's entirely possible there'll be no labor reform at all.

Reason: Chairman Graham Barden (D., N.C.), of the House Labor Committee, opposes the Kennedy theory of soft reform. Barden says, privately, the nation would be better off to postpone reform for another year than to settle for a slap-on-the-wrist.

Unions Unhappy—This picture distresses union leaders. They were confident as recently as February they had enough friends in Congress to obtain "friendly" labor reform and to fend off the kind of stiff clean-up advocated by Sen. McClellan. But some of labor's "friends" in Congress have been less than lion-hearted in recent weeks.

Senate passage of the Kennedy reform bill was a clear gain for union leaders. They have gained in two ways: (1) Approval of any "reform" bill (no matter how weak) gives them a certain aura of respectability; (2) Scandals brought to light by the Senate labor rackets committee now have some of the bad odor removed.

Barden's strategy is plain: If there are not enough House votes for meaningful reform, keep sitting on the Kennedy bill until Congress gives up and goes home.

Main Points Of Kennedy Bill

Here are the main points in the Senate - approved Kennedy reform bill:

Union Finances—Reports to the government and the public are required, covering all union administrative processes, assets, liabilities, receipts, salaries and payments to officers and employes, loans to union members and businessmen.

Union Officers—They must report financial transactions and holdings by themselves and family which might involve conflict of interest.

Employers — They must report payments or deals with labor-management consultants, funds spent advising workers about unions.

Union Elections — Secret-ballot election of officials and delegates is required every five years for internationals, three years in locals.

Picketing — "Shakedown picketing" to extort money from employers is banned as are hot cargo boycotts.

Union Members — Compromise "bill of rights" provides federal court action if officers interfere with union members' rights.

Economy Is Becoming Popular

Purse Strings Tighten—Pressure groups for more federal spending grow alarmed as Congress moves toward economy, away from free-wheel spending.

More and more congressmen are impressed by the mail they're receiving from back home on government economy. They're revising some of their earlier views on the "need" for new make-work projects.

Here's One Case—Example of recent alarm in lobbying circles: National Rivers and Harbors Congress, a lobby advocating bigger government spending for waterways improvement, set "New starts must **NOT** be stopped" for the theme of its annual meeting in mid-May. Congress is voting many hundreds of millions of dollars this year to carry on existing projects. But this spending lobby is worried Congress may hold new projects to a minimum.

"In view of the threat to the water development program, it is imperative that you attend this Washington session," the rivers and harbors lobby warns its members. "The convention is expected to pass strong resolutions against further efforts to ban new starts on vitally-needed projects."

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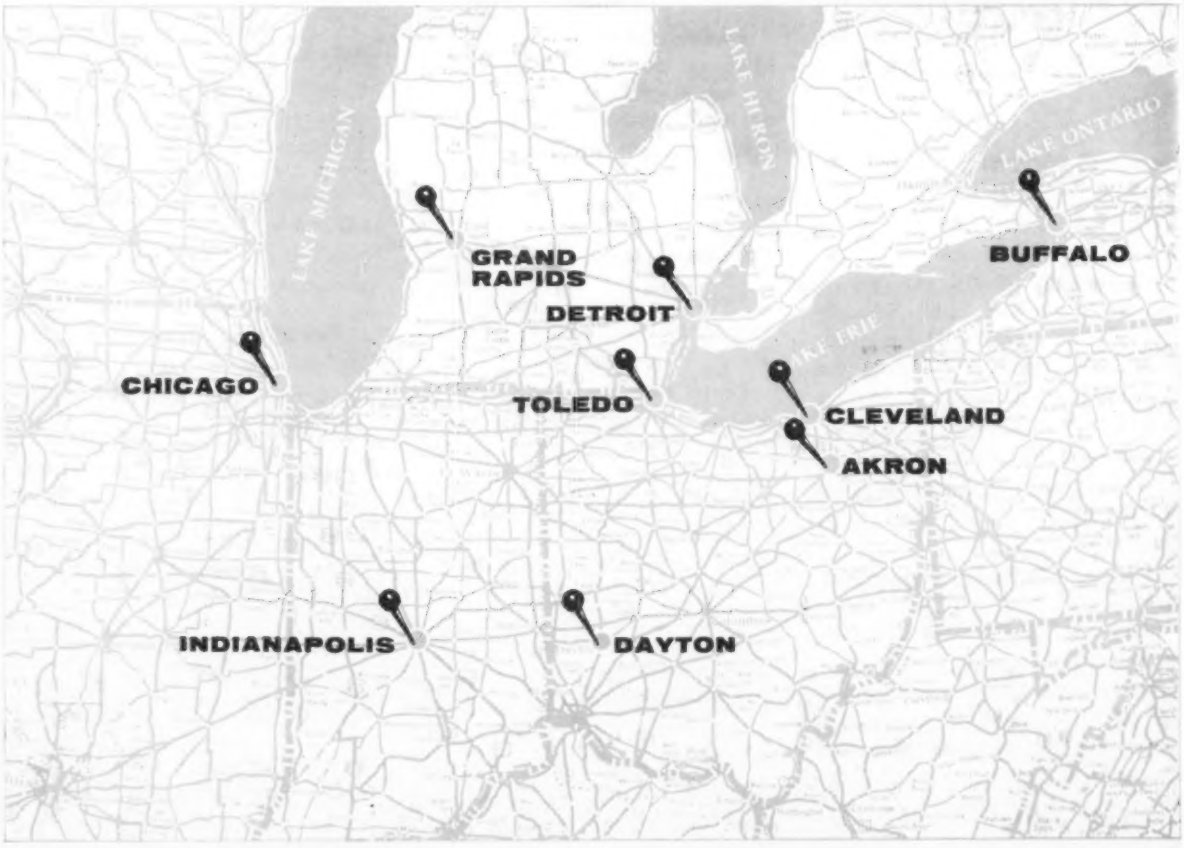

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Big Business in Swimming Pools

California Leads in This $600 Million Market

In the last couple of years the average increase in pools has been 35 pct.

Coast companies are watching this market as there'll be even more new pools built this year.—By R. R. Kay.

▪ Coffee breaks are old hat. The thing to do now is dig a hole in the ground, fill it up with water, and give your workers a "break" to enjoy it.

A plant swimming pool's good for company morale, and production will increase, says the National Swimming Pool Institute.

Meanwhile, backyard pool business keeps growing by leaps and bounds. There are 175,000 installed in the U. S. The industry's forecasters see one million by 1970.

Pool Business — Pool builders predict 70,000 new pools will go in this year. That's up from 53,000 new pools in 1958 and 40,000 in 1957—a 35 pct annual hike.

Half the national market is in the 11 Western States. California has 70,000 private pools. Last year Californians spent $180 million to build pools. And the other 10 Western States spent $120 million.

It seems sure that the industry's $600 million national market will be pushing the billion dollar mark before too long.

Metalworking's Share — Metalworking is bound to do well in this explosive market. The ole swimmin' hole has become a complex deal. Its appetite for goods and services is immense and varied: Plumbing supplies, filters, playground equipment, chemical feeders, pumps, springboards, fencing, pool liners, chemicals, cleaners.

Also, pool fittings, lighting, sports equipment, deck equipment, paint, floats and float lines, audio systems, locker and checkroom supplies, outdoor furniture, and patio furnishings.

Want In — National firms are making their way into the pool supply business. A few: Detrex Chemical Industries, John-Manville, Olin Mathieson, and A. O. Smith Corp.

As with any fast-growing industry, there are plenty of headaches:

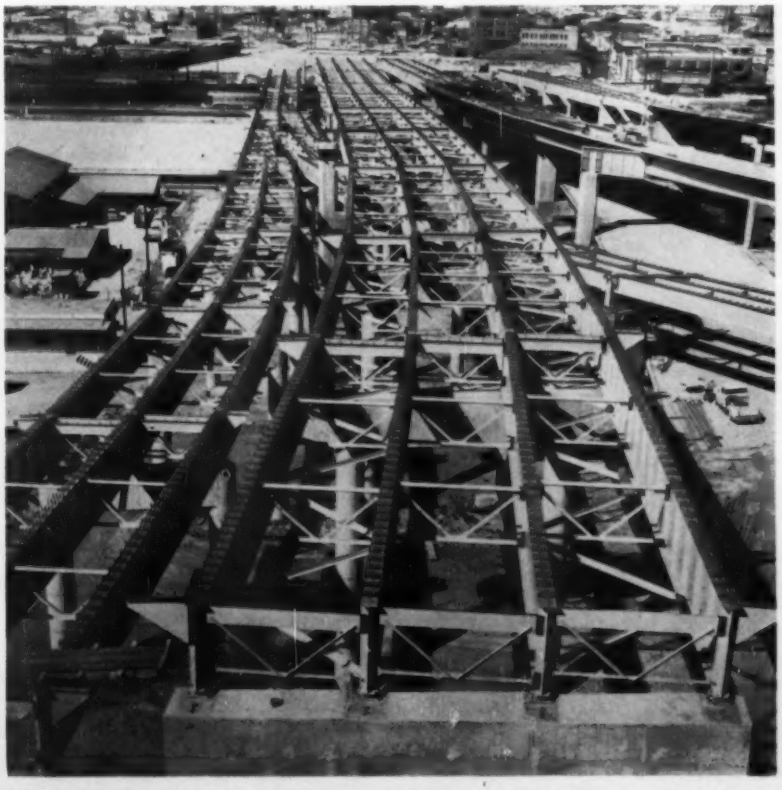
Raising industry standards and ethics.

Creating new markets for swimming pools.

How to set up uniform standards for design, construction, equipment.

Promoting uniform regulations for swimming pool management.

Steel That Spans a River



BRIDGE: It takes about 5500 tons of structural steel to build the Santa Monica Freeway Bridge over the Los Angeles River. It is part of the 22-mile Santa Monica Freeway. Kaiser Steel's Montebello, Calif., plant is fabricating and erecting the 1200-ft long, 14 lane structure.

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Case for New Write-Off Rules

A Tool Builder Says There's a "Crying Need"

N. M. Forsythe tells NMTBA depreciation reform is a must in today's brutal, world-wide business struggle.

He tells builders what they can do.—By E. J. Egan, Jr.

▪ The nation's "crying need" for depreciation reform was presented with some stern warnings and earnest pleas in Detroit last week.

". . . realistic and adequate depreciation reforms are a must if our industry and our economy are to prosper in the brutally competitive international business struggle we face," declared N. M. Forsythe, president of National Automatic Tool Co., Inc.

Addressing his fellow members of the National Machine Tool Builders' Assn. at their 57th Spring Meeting, Mr. Forsythe made it clear that depreciation reform is a national need. "If it is not made more attractive to American industry to scrap obsolete equipment and modernize its facilities, the Europeans will chew us apart," he warned.

Vox Populi—To cry over failure of Washington bureaus to authorize much needed reforms is the wrong approach, Mr. Forsythe feels. "After all," he said, "the bureaus administer the laws that Congress passes and let's not forget that Congress passes the laws they feel the people back home want."

Enforced long write-off periods, non-recognition of technological obsolecence, failure to allow for the factor of inflation, overstatement of profits, over-taxation on "phony profits"—these are some of the accumulated evils of our "obsolete depreciation setup" as Mr. Forsythe sees it.

What Is Needed—By contrast he outlined NMTBA's new position on depreciation. It advocates a bracket system, similar to Canada's, in which all depreciable property is grouped into classes.

(In Canada, all machine tools are in one class and can be written off at 20 pct per year).

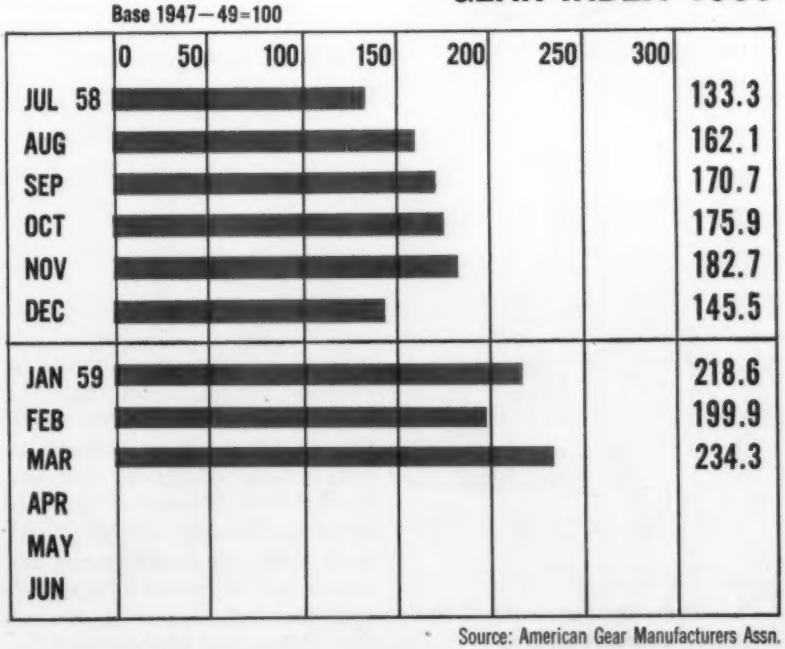
Short Lived—On top of or combined with the bracket system, NMTBA advocates a substantial first-year allowance, along with the concept of shorter lives. "This concept is universal throughout the world with the exception of the United States," Mr. Forsythe explained.

"These facts, coupled with the basic truth that a depreciation setup that would stimulate modernization, would in the long run increase taxable profits and thereby raise tax revenue, should ring a bell with any government bureau," he stated.

What They Should Do — Mr. Forsythe urged his fellow builders to visit their Washington representatives, talk to citizens in their home communities, and do these things: "Tell them the damage that is being done by the present setup; give them the contrast between the U. S. and other countries; and urge them to take constructive action."

He also urged his fellow builders to take advantage of the options for accelerated depreciation already allowed by the Treasury Dept. "For our own operations and our own cause," he pleaded, "we'd better go home and get our own houses in order."

GEAR INDEX 1959



Source: American Gear Manufacturers Assn.

INDUSTRIAL BRIEFS

Who Won — American Arbitration Assn. now publishes regularly a summary of awards. It is free to AAA members, may be seen at any AAA office. Full texts of reported awards can also be purchased. For details write American Arbitration Assn., 477 Madison Ave., New York 22, N. Y.

Medalist — Dr. Augustus Braun Kinzel, vice president, research, Union Carbide Corp., received the Stevens Powder Metallurgy Medal, presented by the Stevens Institute of Technology, Hoboken, N. J. The award honors outstanding scientists who have contributed to the advancement of powder metals.

DC at GE—General Electric has established a new DC Advanced Engineering Center. New designs in equipment and components for the conversion of electric power by static means will be explored. The center is an organizational part of GE's Low Voltage Switchgear Dept., Philadelphia.

Plan Magnesite Plant—E. J. Lavino & Co., Philadelphia, plans to build a plant at Freeport, Tex., for the production of high grade magnesite (periclase), a component of refractory products used in the steel, copper, powder, and other industries.

". . . Says the boss ordered him to install automatic lappers!"

Milan Confers — The University of Milan has conferred the degree of Doctor of Engineering on William Ward Powell, vice president, Mesta Machine Co., Pittsburgh. Mr. Powell is the first American to receive this degree, presented in recognition of his contributions to the development and improvement of the steel industry in Italy.

Bliss in W. Germany—The E. W. Bliss Co., Canton, O., and Henschel-Werke, GMBH, of Kassel, West Germany, have completed an agreement for a joint venture in W. Germany. Bliss and Henschel have formed a new corporation, Bliss-Henschel, with Bliss holding a 75 pct interest and Henschel the remaining 25 pct.

From Either End—A vacuum degassing system that will permit both top and bottom pouring of single steel ingots is being built by Blaw-Knox Co., Pittsburgh. The system will handle 36-in. or 48-in. ingot molds.

Brazilian Forgers — A Brazilian company is being formed with a potential output of $10 million worth of steel forgings per year. Parent companies are American Brake Shoe Co., New York; Steel Improvement & Forge Co., Cleveland, and Cia. Mechanica e Importadora of Sao Paulo. The new firm is named Sifco do Brasil.

Canadian Contract — Henry J. Kaiser Co. (Canada) Ltd. has been awarded a contract by Wabush Iron Co., Ltd., of Cleveland, to design and construct an iron ore concentration pilot plant. It will be built for the Wabush Iron Co., Ltd., at Wabush Lake, Labrador, Canada.

Rockford Expands — Rockford Machine Tool Co., Rockford, Ill., acquired Maplewood Machinery Co., Chicago, manufacturer of roll forming equipment, and the Ingels Elbow Machine Corp., Chiago, manufacturer of power and hand tools. All manufacturing activities will be moved to Rockford and operated as the Maplewood Div. of Rockford Machine Tool Co.

Ferroalloy Furnace—Ground has been broken for the installation of another furnace by Pittsburgh Metallurgical Co., Inc., at its Calvert City, Ky., plant. The company is a leading producer of ferroalloy for the steel industry.

New Tricks—U. S. Steel has put a traveling classroom into service to teach employees proper maintenance of plant lubricating systems. The classroom is a 35 ft mobile training unit, built by National Tube Division.

Revere Foil Plans—Revere Copper & Brass Inc., plans to increase its aluminum foil production capacity by an addition to its foil plant in Newport, Ark. The addition to the existing Newport building, and installation of new equipment will increase plant capacity by nearly 50 pct.

ASA Index—The 1959 Price List and Index of American Standards, just published, is available free from the American Standards Assn., Dept. PR 66, 70 East 45th St., New York 17, N. Y.

West to East — The Frank J. Laher Spring & Tire Corp., Oakland, Calif., plans to locate an $800,000 manufacturing plant at New Albany, Mass. It will manufacture automobile springs, batteries, brake linings and electric carts. When in full production the company will employ more than 250 workers.

Caloric R and D—Caloric Appliance Corp. will build a research and development center at its Topton, Pa., plant. The center will have facilities for engineering, designing, and styling. It will include laboratories, model shops and studios, and will be ready in the fall.

Van Norman Owns—Van Norman Industries, Inc., has acquired the control of American Pulley Co., Philadelphia. American Pulley manufacturers power transmission, materials handling equipment, and pressed metal specialties, and will be continued as a separate company.

3,000-ton R. D. Wood High Speed Forging and Cogging Hydraulic Press. Used for forming, forcing, upsetting, impact extrusion. Handles aluminum, bronze, magnesium, steel, brass and other metals. Construction provides rigidity, plus the very accurate guiding essential in die forging and other press operations. Send for complete details of this and other R. D. Wood Presses for the metalworking industry.

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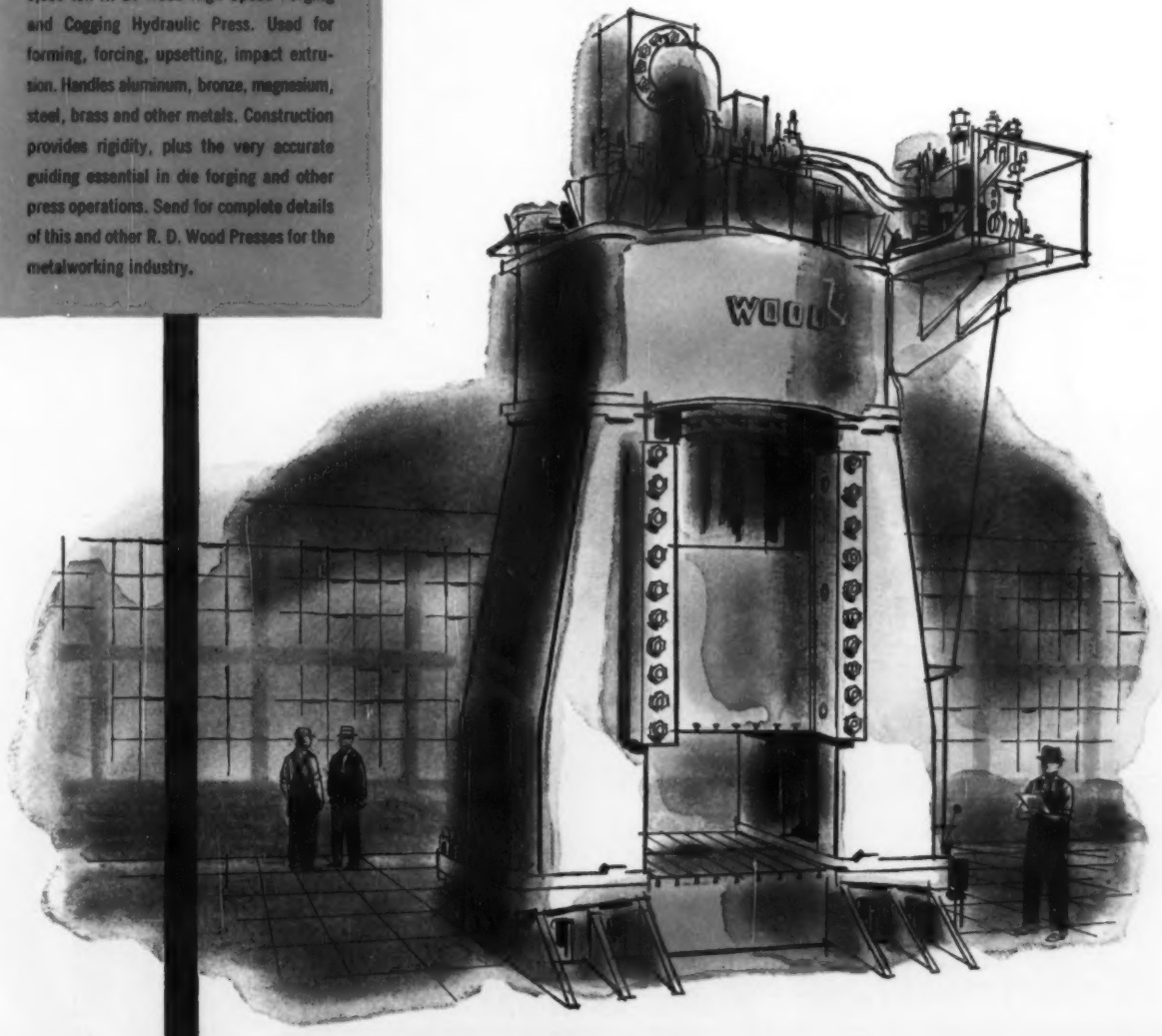

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F. L. Magee, named chief executive officer, **Aluminum Co. of America,** Pittsburgh.

H. H. Whittingham, appointed president and general manager, **Long Manufacturing Div. of Borg-Warner Corp.**

J. D. Darby, appointed vice president and assistant to president, **U. S. Steel Corp.**

J. P. McNamara, elected vice president, personnel, **Bridgeport Brass Co.,** Bridgeport, Conn.; **F. J. Cunnane,** vice president and plant manager.

P. A. Mongerson, promoted vice president and **W. D. Gwin,** to factory manager, **The Chicago Screw Co., Div. of Standard Screw Co.,** Bellwood, Ill.

C. B. Smith, elected assistant controller, **Alan Wood Steel Co.,** Conshohocken, Pa.

M. M. Anderson, L. E. Hickman, and **L. L. Litchfield, Jr.,** named executive vice presidents, **Aluminum Co. of America,** Pittsburgh; **T. W. Bossert** and **R. A. Learnard,** elected vice presidents.

D. R. Meserve, appointed sales manager, Organic Coatings Div., **Metal & Thermit Corp.,** New York.

J. S. Anderson, appointed general manager, Tubular Products Div., **The Babcock & Wilcox Co.,** Beaver Falls, Pa.

Dr. K. W. Maier, appointed scientific adviser to the vice president, research and development, **Winchester-Western Div., Olin Mathieson Chemical Corp.**

H. T. Lowell, Jr., appointed sales manager, **Sperry Products, Inc.,** Danbury, Conn.

V. H. Swearingen, named supervisor, sales service, **Permaglas Div., A. O. Smith Corp.,** Kankakee, Ill.

E. W. Moffitt, appointed general manager, **Midvale-Heppenstall Co.,** Nicetown, Pa.

J. A. Boyle, appointed director, mine inspection, **Coal Div., U. S. Steel Corp.; W. D. Snell,** appointed chief mine inspector for the Division's Frick District, Uniontown, Pa.

E. E. Swartswelter, elected vice chairman and a director, **Blaw-Knox Co.,** Pittsburgh.

A. C. Harris, named manager, sales, rotoform products, **Commercial Shearing & Stamping Co.,** Youngstown, O.

R. W. Ross, appointed regional sales manager, Great Lakes Region, **Standard Conveyor Co.**

J. P. Sharp, named regional product sales manager, Eastern sales area, **Denison Engineering Div., American Brake Shoe Co.,** Columbus, O.

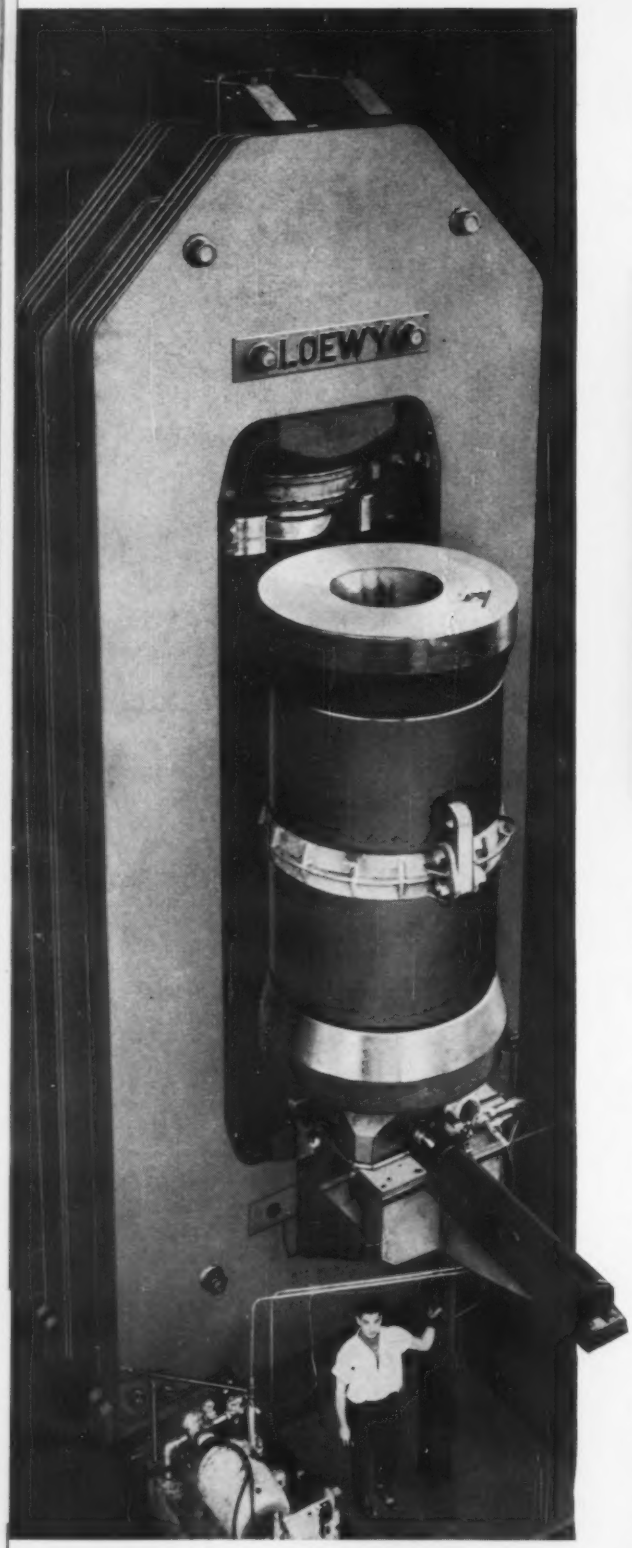
W. H. Fulmer Jr., named super-

(Continued on P. 85)

W. E. Walton, elected vice president, **Dewalt Div., American Machine & Foundry Co.,** Lancaster, Pa.

H. E. Hirschland, elected vice president, commercial development, **Metal & Thermit Corp.**

E. W. Lothman, elected senior vice president, **Whitehead Metals, Inc.**



View of Loewy high-pressure vessel showing pressure cylinder withdrawn for loading

Tested like a patient's heartbeat and blood pressure in surgery...

THIS HUGE pressure vessel—believed to be the largest ever built—was conceived for the extremely high operational requirements of 30,000 psi and test pressure of 45,000 psi.

Designed and built by Loewy-Hydropress Division of Baldwin-Lima-Hamilton for the United States government, this unusual piece of equipment required an elaborate testing procedure comparable in precision to the observation of a patient's heart during a surgical operation.

More than 80 SR-4® strain gages, products of B-L-H's E&I Division, were located at all critical points of the structure. Over 1500 readings were taken of the strains and stresses developed during loading the vessel up to 45,000 psi and down again.

Measurements obtained during this procedure were used for both the analytical computations and the graphical plotting of stress-strain diagrams required to describe the successful acceptance tests.

Fabrication and testing were performed entirely at B-L-H's Eddystone Division—another demonstration of the integrated inter-divisional facilities of the Baldwin-Lima-Hamilton Corporation.

Loewy coordinates the teamwork of its B-L-H fellow divisions in many technical fields. For creative engineering, research and development in the area of high-pressure hydraulics, direct your inquiries to Loewy-Hydropress Division, Dept. A-5.

Loewy-Hydropress Division

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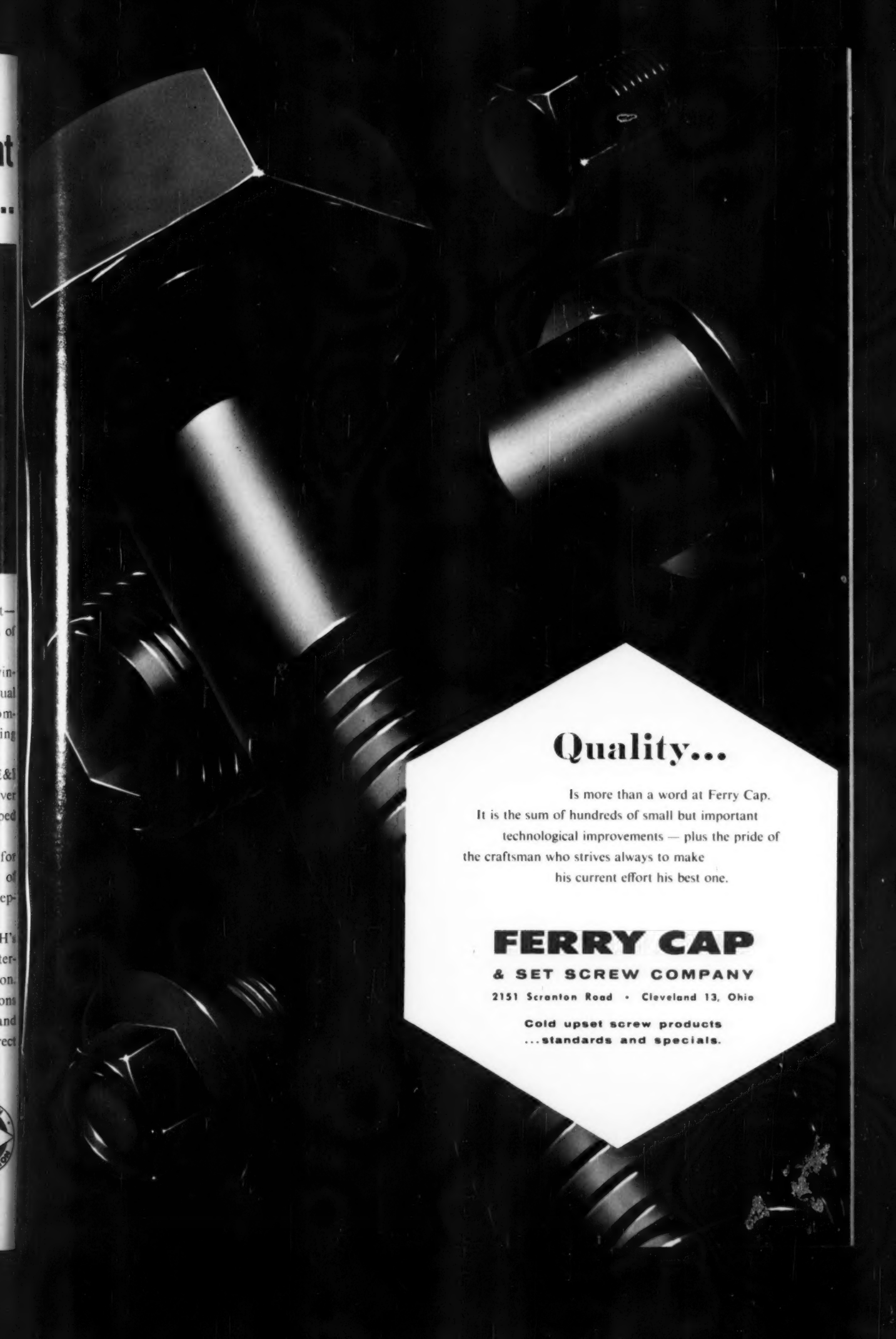
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technological improvements — plus the pride of
the craftsman who strives always to make
his current effort his best one.
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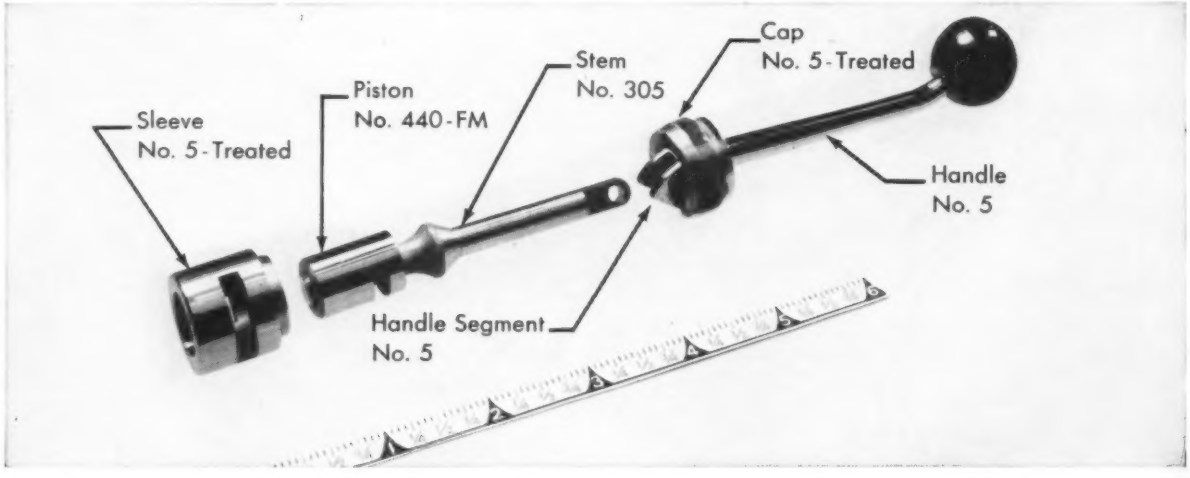
for strength, corrosion resistance and sales appeal

...it had to be Stainless



In this new one-handle mixing faucet all the important working parts are made of wear-resistant, corrosion-proof Carpenter stainless steels. Once you select stainless steel by Carpenter, you can forget about corrosion. You can design for high stresses, disregard maintenance problems, stop worrying about temperature variations and be assured that fabrication will be easy. And you not only get the help of consumer-acceptance of stainless products, but also the long experience of Carpenter. From the lab work through final production, Carpenter staffmen have the knowledge and the data. Call your Carpenter representative for the engineering information on stainless that you need. The Carpenter Steel Company, 121 W. Bern Street, Reading, Pa.

Carpenter STEEL

The Carpenter Steel Company, Main Office and Mills, Reading, Pa.
Alloy Tube Division, Union, N. J.
Carpenter Steel of New England, Inc., Bridgeport, Conn.
Webb Wire Division, New Brunswick, N. J.

(Continued from P. 81)

visor-general, Industrial Relations Dept. at the Massillon, O., plant, **Republic Steel Corp.'s Central Alloy District.**

K. A. Henn, named domestic sales manager, **Jones & Lamson Machine Co.,** with headquarters in Springfield, Vt.

M. J. Smith, appointed division superintendent, **Iron and Steel Div., Kaiser Steel Corp.,** Fontana, Calif., plant.

L. J. Gillett, appointed director, purchases, **Kaiser Engineers, Div., Henry J. Kaiser Co.**

J. A. Haddad, named general manager, Advanced Systems Development Div., **International Business Machine Corp.,** New York.

H. B. Puff, promoted to asst. product manager, resins, **Durez**

(Continued on P. 88)

No. 4 in a series of Hoerner corrugated shipping container experts

THIS IS THE HOERNER SPECIALIST FOR PACKAGING TINY THINGS

Very little objects can often cause very big shipping problems. But not for Hoerner experts. Their experience in packaging Lilliputian products puts them in good stead. If you manufacture tiny things, and if your packaging and shipping costs are too large, contact the Hoerner office or plant nearest you. A Hoerner Packaging Engineer will bring your costs in line with your product.

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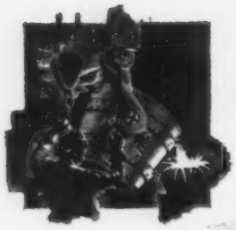

AMERICAN ORIGINALS IN IRON AND STEEL

The dry creek that stopped the furnace

In 1792, America's infant iron industry had spread as far west as Kentucky. In that year, a furnace was erected by Jacob Meyers on Slate Creek in Bath County.

The undertaking was a slow and laborious one. Essential supplies had to be packed through the wilderness. Timbers and stone were hewn and set by hand. Flash floods were a constant threat, and Indian raids an ever-present menace.

Finally, after a year of patient toil, the operation was completed. The great mill wheel churned, the bellows pumped and the furnace roared . . . but not for long. As the southern sun beat down, Slate Creek fell from a turbulent stream to a timid trickle. The mill wheel stopped, and so did production . . . until welcome rains once more filled up the dry flood gates.

Modern-day producers, of course, aren't exposed to such production hazards. But, there are others which you can eliminate by using Baker's MAGDOLITE. This carefully developed product will assure you of uniform ingots and lowest refractory costs. This is because MAGDOLITE has proved itself 5 ways better . . . in composition, preparation, strength, economy, and quality. Don't just say dolomite, specify Baker's MAGDOLITE . . . and be SURE!

ANOTHER AMERICAN ORIGINAL

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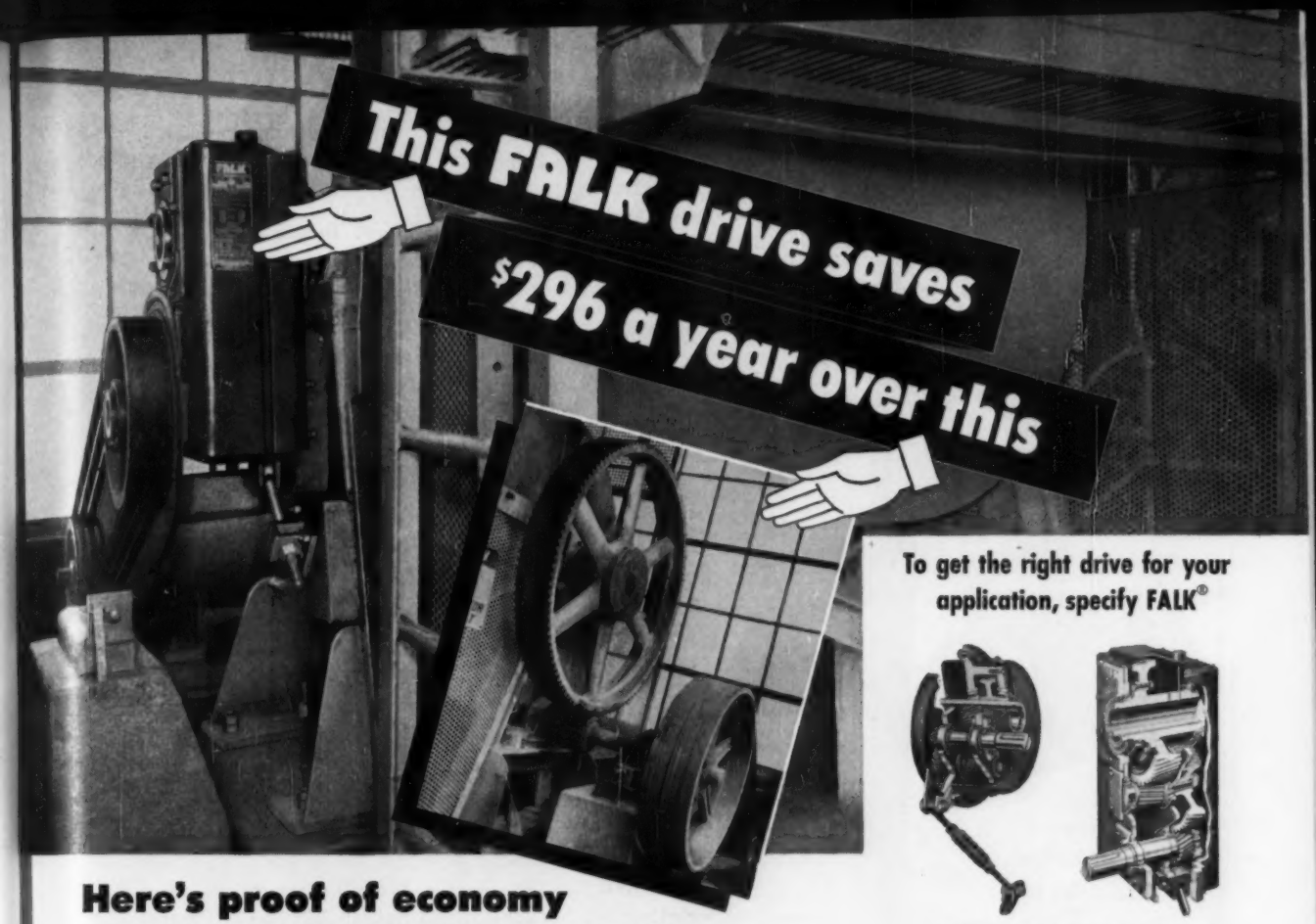

Here's proof of economy with FALK Shaft Mounted Drives

PROBLEM—For many years, a prominent Eastern abrasives manufacturer* experienced high maintenance and down-time costs, as well as excessive noise and vibration, in the operation of 19 pebble mills driven by open spur gears. Drive gears and jack shaft pillow blocks required frequent repairs or replacement, and trunnion shafts often failed, due to radial overloading of the bull gear when broken pinion teeth bottomed between gear teeth.

SOLUTION—After numerous unsuccessful approaches to these problems, the solution was found by mounting a Size 315J FALK Shaft Mounted Drive directly on the mill drive trunnion. This eliminated objectionable gear noise and vibration...greatly reduced costly down-time and loss of production...and cut annual maintenance and replacement expenses as indicated by the following figures taken from the customer's records:

Spur Gear-and-Pinion Drive		FALK Shaft Mounted Drive	
Bull Gears	$ 56	VEE Belts	$ 30
Pinions	120	FALK Shaft Mounted Drive (based on 10-year life)	70
Pillow Blocks	90		
VEE Belts	30		
Trunnion (5-year life)	100		
Annual cost	$396	Annual cost	$100
		ANNUAL SAVINGS	$296

IF OBSOLETE DRIVES ARE COSTING YOU MONEY, a change to Falk All-Steel Shaft Mounted Drives can effect important savings in money and production. Used on almost any type of machine, these compact, rugged units are establishing new standards of economy and efficiency in many industries. Specify FALK Drives on your purchased equipment...For full details, **write for Bulletin 7100.**

*Name on request

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SHAFT MOUNTED DRIVES

Horizontal or vertical units—½ to 50 hp—420 to 5 rpm—single and two double reduction ratios—output torque ratings up to 41,000 lb-in (consult factory for higher torque capacity).

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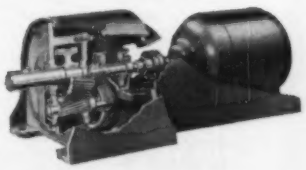

ALL-MOTOR® MOTOREDUCERS

Sizes up to 75 hp—furnished with or without standard foot-mounted motor—standard output speeds 1.2 to 520 rpm (with 1750 rpm motors) —ratios as high as 54,000:1 in semi-standard designs. Integral units (gearmotor type) also available. Ask for **Bulletin 3100.**

• • •

FALK Drives are available from factory and distributor stocks from coast to coast. Consult your Falk Representative or Distributor.

FALK

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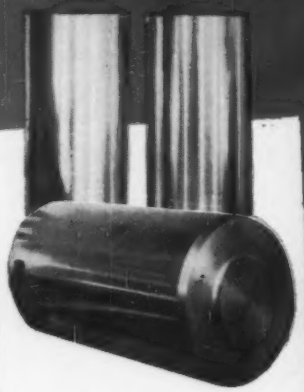
RED CIRCLE Rolls ALLOY-CHILLED

Hyde Park RAMS



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Hyde Park Rams are available in Chilled or Alloy Iron.

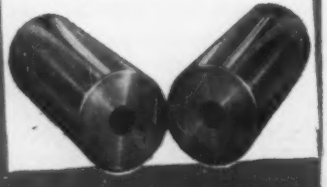
Furnished in hardness range to meet your specification . . . ground to your required size.

On your next replacement of Rams—or for new equipment—consult us. Our engineers will be glad to assist you.

Red Circle Rolls for every Purpose

Rolling Mill Equipment

Gray Iron Castings up to 80,000 lb.



Hyde Park FOUNDRY and MACHINE CO. HYDE PARK Westmoreland County, Pa.

Rolls
Rolling Mill Equipment
Gray Iron Castings

(Continued from P. 85)

Plastics Div., Hooker Chemical Corp., North Tonawanda, N. Y.; **E. E. Woodman,** appointed district sales manager, Chicago office of the division.

J. R. Philips, Jr., appointed general superintendent, **Republic Steel Corp.'s** steel plant, Youngstown, O.

L. A. Zwicker, appointed general manager, **Harrison Radiator Div.** of **General Motors Corp.** at Lockport, N. Y.

D. N. Spierling, appointed chief metallurgist, Detroit and Eastern plants, **Detroit Steel Corp.,** Detroit.

C. F. Lahrman, named manager, **Stainless Steel Div. of Steel Warehousing Corp.,** Chicago, a subsidiary of **Jessop Steel Co.,** Washington, Pa.

A. A. Kappenhagen, appointed general superintendent, **Republic Steel Corp.'s** Chicago steel plant.

D. R. Smith, appointed Eastern sales representative, **Tonawanda Iron Div. of American-Standard.**

J. F. Doran, promoted to chief industrial engineer, **Chase Metal Works, Chase Brass & Copper Co.,** Waterbury, Conn.

T. M. Hendrickson, named power engineer, **The Youngstown Sheet & Tube Co.**

E. H. Niehaus, appointed commercial engineer, Receiving Tube Dept., Syracuse, N. Y., **General Electric Co.**

M. J. Dempsey, appointed product metallurgical engineer, Technology Dept., **Crucible Steel Co. of America,** Pittsburgh.

OBITUARIES

W. F. Harrah, 87, co-founder and honorary chairman of the board, **National-Standard Co.,** Niles, Mich.

Meredith Spear, 51, production manager, **AC Spark Plug Div. of General Motors Corp.**

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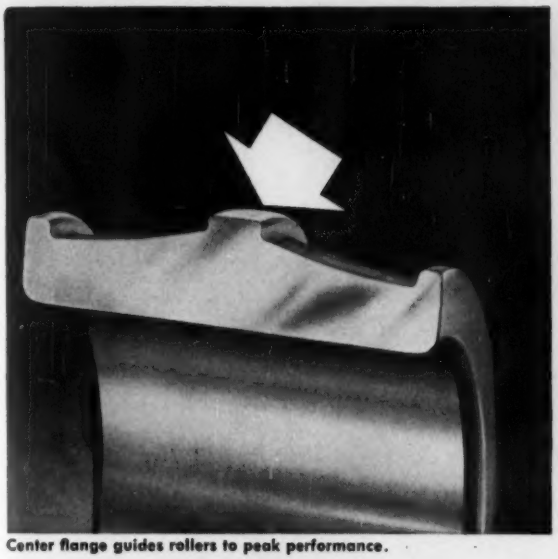
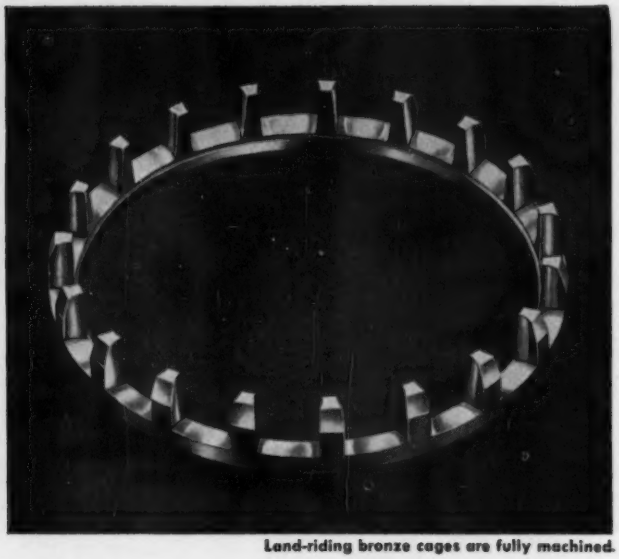
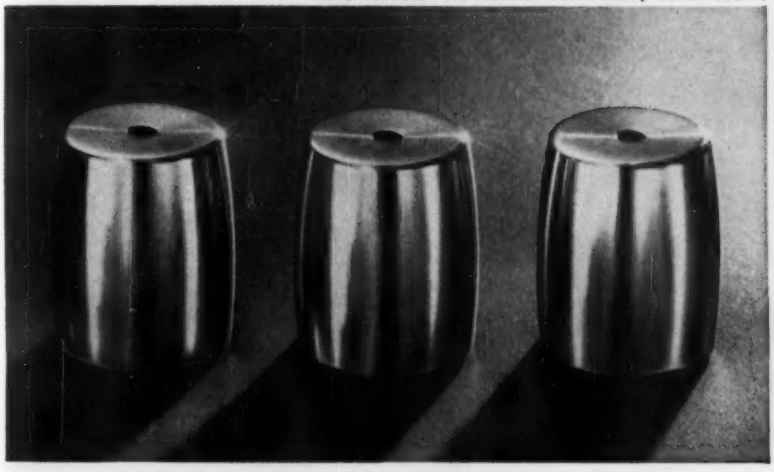


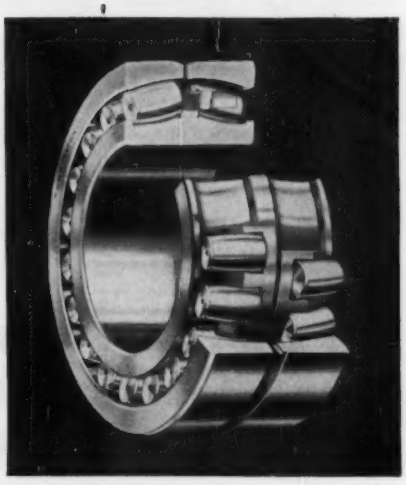
Center flange guides rollers to peak performance.



Land-riding bronze cages are fully machined.

Roller diameters are matched electronically within .0001".





Consider every design feature and you'll choose Torrington!

Torrington has compromised none of the operating design features of its Spherical Roller Bearing, because application experience has proved them essential to superior bearing performance.

There's no substitute for the stabilizing effect of the integral center guide flange. Torrington's asymmetrical roller seeks this flange under load. Skewing and stress concentrations are eliminated. Every roller carries its share of the load, for roller diameters are matched electronically within .0001" for even load distribution.

Rollers are precisely spaced by fully machined land-riding bronze cages that withstand even the high stresses of eccentric service. Two independent cages, one for each row, prevent roller drag and side stresses under thrust loads. Size-stabilized races prevent "growth" or change in dimension in service.

These features mean a cooler-running, longer-lasting bearing. When you buy bearings, look into *every* detail, and you'll choose Torrington. **The Torrington Company, South Bend 21, Ind.—and Torrington, Conn.**

TORRINGTON BEARINGS

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Superior performance features of
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- Integral guide flange for roller stability
- Asymmetrical rollers seek flange for positive guidance
- Electronically matched rollers
- Size-stabilized races
- Fully machined land-riding bronze cages
- Controlled internal clearances
- Even load distribution
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- Long service life

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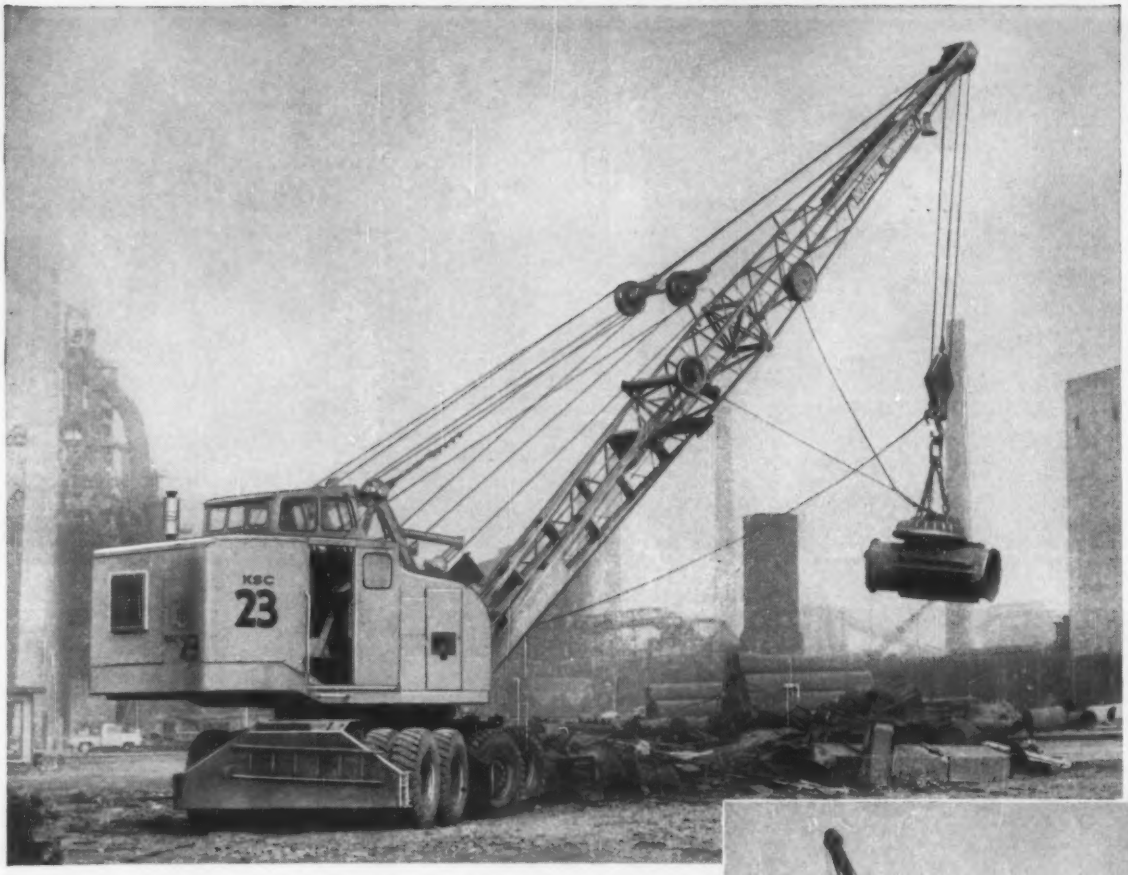

ALL PARTS ARE INTERCHANGEABLE on Brownhoist's Diesel Electric Locomotive and Wagon Cranes

The 50 Ton Diesel Electric Wagon Crane and the 50 Ton Diesel Electric Locomotive Crane pictured here are two of several Industrial Brownhoist heavy-duty cranes operated by Kaiser Steel Co. at their huge plant in Fontana, California. Although these cranes operate at peak efficiency on a variety of rugged, daily jobs, it sometimes becomes necessary to replace parts. With Industrial Brownhoist cranes, either locomotive or wagon, part replacement is both swift and economical for every part is *interchangeable* from the car body up. The number of parts in your stock can be cut in half and down time for part replacement can be virtually eliminated.

If you need both a wagon crane and a locomotive crane for the heavy-duty jobs around your plant, get Industrial Brownhoist cranes. You, too, will benefit from the interchangeability of parts and such high performance features as exclusive 360-degree monitor-type cab, clear-vision boom, straight line power train and electric rotation for fast operation. Write for further information today.

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250 TON WRECKING CRANE

COAL-ORE BRIDGE

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INDUSTRIAL BROWNHOIST CORPORATION • BAY CITY, MICHIGAN • DISTRICT OFFICES: Cleveland, Philadelphia, Chicago, San Francisco, Montreal.

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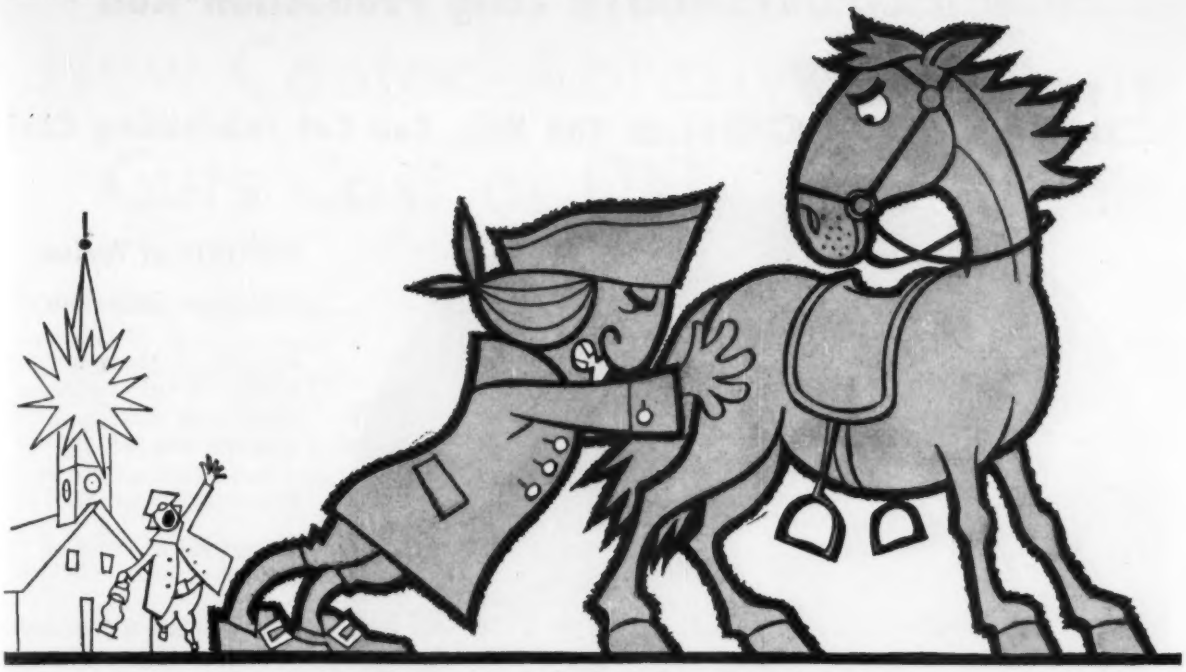
Man's Eternal Struggle with the Machine



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Will the conquest of space wait while you make new machines work right?

Hardly! Not when the competition is boasting they'll bury us all.

Your job is to produce missiles and space craft. That's a full-time job in itself. Your responsibility for specifying equipment and processes only adds to that work-load. Obviously, you can't afford to be buried under new machines that can't be qualified and certified in the shortest time with the least expense and effort.

Sciaky knows you have to produce on time and to the most rigid specifications. That's why Sciaky's responsibility just *begins* with equipment design and manufacture. That's why Sciaky welding machines are fully tested and proved to do *your* job *before shipment*. That's why Sciaky machines are commonly installed, qualified, and certified in the shortest possible time. And, that's why Sciaky Service Engineers are ready to back you fully.

Why take less than the full advantage of talking with a Sciaky Application Engineer when you are considering equipment. No obligation, of course.

The aviation industry has been taking that advantage ever since Sciaky machines made it possible to resistance weld aluminum in production. The entire Sciaky organization has been built by satisfying people just like you. As a result, Sciaky has produced almost all the basic advances to the technology of resistance welding since the year 1917.

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New Coated-Abrasive Machine Cuts Cost of Deburring Gears

A new concept in gear deburring makes its debut in the form of a fast, accurate and automatic machine. It does a thorough, low-cost job on a wide range of gear types and sizes.

By E. J. Egan, Jr.—
Machinery Editor

▪ Here's the first news about an automatic machine designed to cure one of the biggest headaches any gear maker has: thorough deburring of gear tooth profiles and adjacent face areas.

Known as the Model 1600 Barber-Colman Deburring Machine, the new unit embodies a coated-abrasive concept aimed smack at obsoleting other ways of doing the job. It was developed jointly by Minnesota Mining & Mfg. Co., St. Paul, and the Barber-Colman Co., Rockford, Ill.

The machine will deburr any size gear, sprocket, or toothed-wheel form up to 16 in. OD, and having a diametral pitch ranging from 3 to 32. (A smaller machine will be available for deburring small (up to 3 in. OD) fine-pitch gears.)

Does Complete Job—Compared with laborious hand filing and other manual deburring techniques, the new unit is extremely fast and accurate. In a few seconds—less than a minute for many gears—it removes all traces of even the tiniest burrs. Tooth profiles viewed under a microscope show none of the bits of metal which often become peened over onto tooth surfaces to hamper smooth gear action.

Moreover, the machine confines its action to the immediate tooth-profile area; original machined or ground finish on gear faces and tooth surfaces is not disturbed or impinged upon.

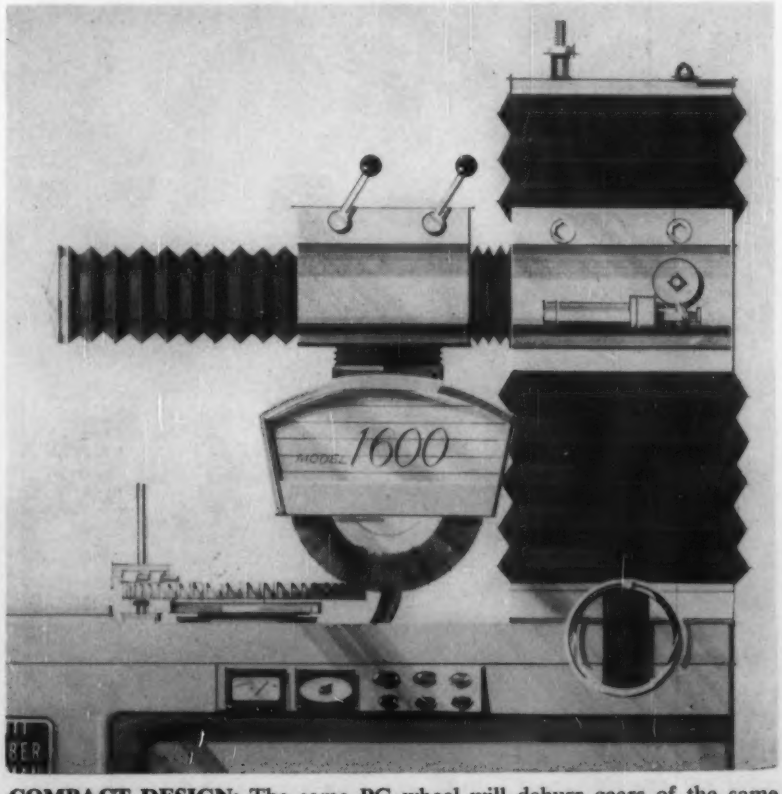
This is more than just a deburring machine, however. Variable timing and feed controls allow it to put a chamfer or "break" on the entire tooth profile, including root and fillet sections.

Prevents Distortion — This chamfer-control feature is especially important with helical gears where the acute-angle side of the tooth profile may tend to distort or burn during the hardening process.

Proper chamfering is also an important safety feature; many firms insist it be done on sharp-edged gear teeth to lessen the chances of workers cutting their fingers and hands.

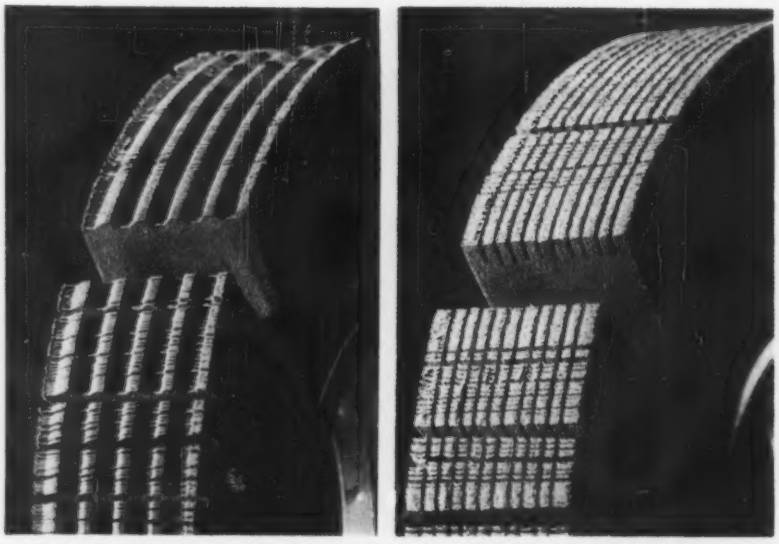
A prototype machine is now on a scheduled tour of clinic-type demonstrations at various 3M district offices and warehouses. Before it went on tour, it was put through its paces for The IRON AGE at the Barber-Colman plant.

Shape-Conforming Wheel—The deburring tool is a specially designed "PG" (polishing and grind-

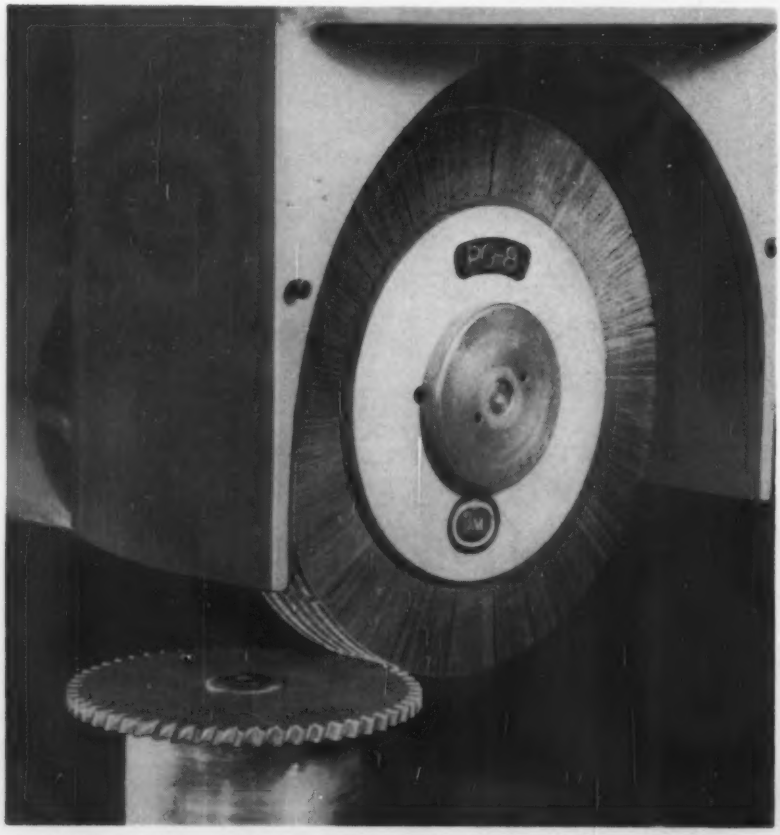


COMPACT DESIGN: The same PG wheel will deburr gears of the same pitch and helix angle regardless of the number of teeth in these workpieces.

ing) wheel made by the 3M company. It consists of hundreds of die cut leaves of 3M coated abrasive cloth which are bonded together in a radial pattern to form a wheel. The bonded ends of the leaves give the wheel a solid hub; the unbonded ends give it a flexible, work-conforming periphery.



FORMED OR FLAT?: Form-dressed PG wheel (left) does most accurate job. Grooved, flat-faced wheel (right) will serve in many cases, however.



TYPICAL SETUP: Gear and form-dressed PG wheel rotate in timed relationship for fast deburring and smooth chamfering of tooth profiles.

The Model 1600 uses PG wheels up to 14 in. in diam, usually with a face width of not more than 2 in. Depending on the work to be done, grit sizes ranging from 50 to 500 are available in either aluminum oxide or silicon carbide grain.

An accompanying photo shows a typical deburring setup, with the gear workpiece mounted on a spindle which is at 90° to the spindle axis of the PG wheel. As a rule, the wheel periphery is predressed to the form of the tooth profile to be deburred.

Coordinated Action—During the machine cycle, the PG wheel automatically feeds downward to contact the workpiece. The wheel and workpiece then rotate in a timed relationship. This is established by change gears on the machine so that the workpiece will index one tooth for each revolution of the deburring wheel.

An equal amount of stock is removed from each tooth profile in one full revolution of the workpiece.

Two control dials adjust easily to increase or decrease the amount of stock removal and the resulting chamfer. One regulates cycle time in minutes and seconds. The other controls the amount of feed of the deburring wheel, from 0.0005 to 0.004 in. per cycle.

Tooth Count is Key—The machine deburrs spur or helical gears with equal ease. In fact, the lead on a helical gear has no bearing on the action of the PG wheel. The ruling factor is the number of teeth in the workpiece; this determines the choice of change gears for any job.

Early evidence of the machine's money-saving potential comes from a subcontract job Barber-Colman did recently for a farm implement manufacturer. It involved deburring a number of 24-tooth sprockets on both sides.

"The old way of doing this job

was by hand filing and brushing," says C. L. Murphy, industrial trades manager for the 3M company. "It took three minutes and cost 27½ cents to deburr both sides of a sprocket.

Shows Major Savings—"By contrast, it took the new machine only 40 seconds to deburr both sides, and the cost per piece dropped to 7.4 cents. If the company were to use the deburring machine for all such work, we estimate it would save over $33,000 per year."

Wheel life on this job was equivalent to 2000 sprockets, Mr. Murphy points out, although it will vary with the type, size, and pitch of the workpiece; the severity of the burr condition; and the amount of chamfer required.

Continued use of a PG wheel decreases its diameter, of course. But since the abrasive grain and the cloth backing wear away together, there is always a fresh grain surface available. Moreover, as the wheel wears, it stays in timed relationship with the workpiece. There is no need to vary the basic wheel speed of 2400 rpm.

Converts for Dressing—Dressing or forming the PG wheel for a new job, or redressing it during a long run, takes about 10 minutes. The work is done on the deburring machine itself.

Any gear from a group to be processed can be made into a basic dressing tool. A sheet of coarse-grained coated abrasive, with a pressure-sensitive adhesive backing, is pressed onto one face of the gear. The abrasive sheet is then notched to conform to the tooth pattern around the entire rim of the gear.

Dressing is much like the actual deburring operation. The dressing tool is mounted on the workpiece spindle, but the PG wheel is reversed on its spindle. This is so the dressing tool will contact the softer, cloth-backing side of the PG wheel and impact the proper tooth form more easily.

Once dressed, the deburring wheel is again reversed on its spindle to bring the coated abrasive surfaces into working position.

POINTS OF DIFFERENCE: Brush-deburred helical gear shows impingement marks on face (top left) and brushed-over burr on enlarged (20X) tooth profile below. Gear at top right, deburred on new machine, retains as-machined face, shows (below) a burr-free tooth profile at 20X.

Can Use Flat Wheel—A form dressed deburring wheel is not always needed, however. Some gears can be deburred by simply oscillating a flat-faced PG wheel over the tooth form. Narrow annular grooves in the wheel face help in some cases by making the wheel more flexible.

Work of this kind does not require a timed relationship for wheel-workpiece rotation. However, the automatic oscillating motion of the PG wheel can be regulated for best results on various workpieces.

The machine also has an attachment for use when heavy burrs cause too much wheel wear or increase the time cycle. It positions a turning tool just ahead of the deburring wheel so that roughing and finishing are done simultaneously.

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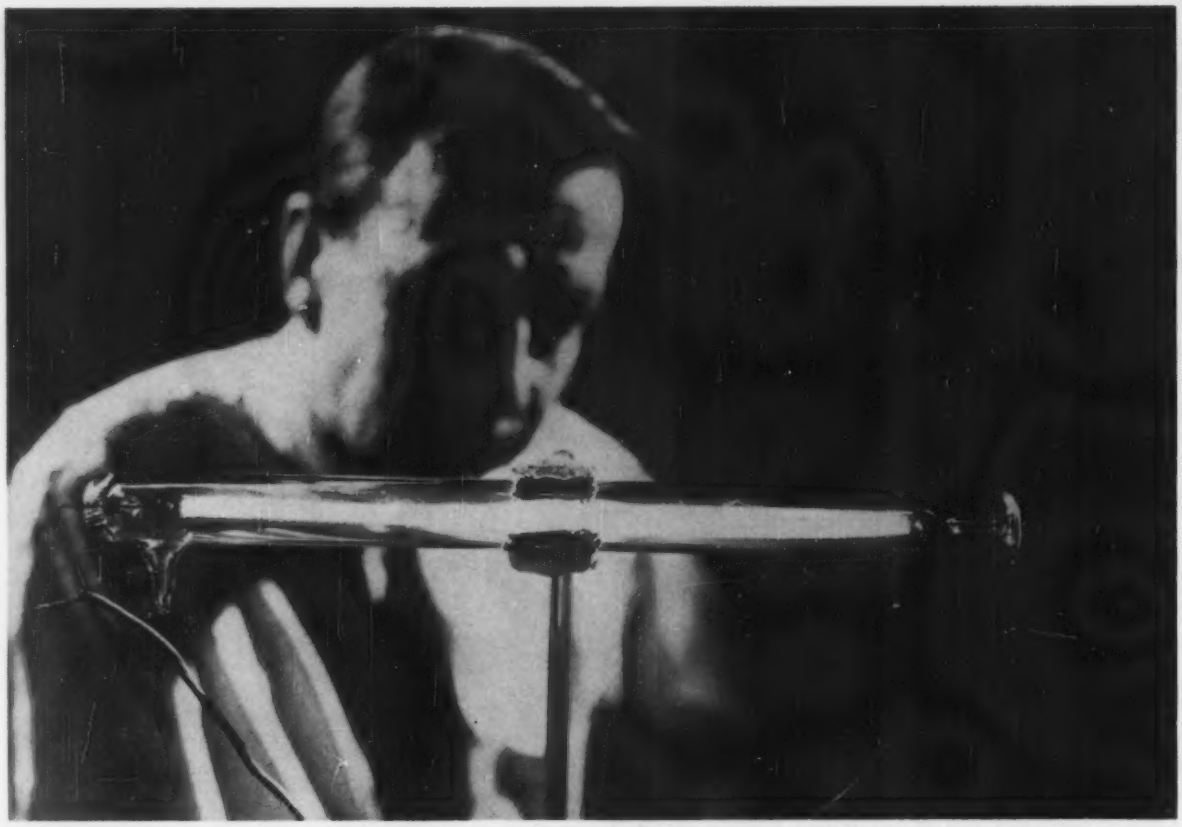


LIGHTS UP: Sealed in a vacuum, a narrow strip of graphite cloth attains white heat when operated on 110-v.

New Process Makes Graphite Fabrics for Many Uses

Product designers in many fields have a new material to work with. It's a pure graphite cloth, which features several unique properties.

▪ Organic textile fabrics can now be converted directly into flexible graphite cloth for a wide variety of possible uses.

The process, developed by National Carbon Co., Div. of Union Carbide Corp., graphitizes a fiber or fabric such as rayon by heating it electrically to nearly 5400°F. Any textile form—yarn, braid, felt, and knit or woven fabrics—can be thermo-chemically converted in this way.

Uses Being Studied—Many possible uses for these flexible graphite fabrics are foreseen. For example, experimental quantities of the new cloth are being evaluated for use as reinforcing agents in plastic and other refractory materials used at high temperatures, as in missile nose cones.

National Carbon's markets for its new product will depend largely on what uses industrial designers can find for graphite fabrics that embody a unique combination of electrical, chemical and mechanical properties.

Stronger When Hot—For example, graphite has no melting point at ordinary pressures. It sublimes (goes directly from the solid to the vapor state) only at about 6600°F. It also gets stronger as the temperature goes up; tensile strength at 4500°F is about twice what it is at room temperature. At temperatures above 750°F the material oxidizes in air.

At the low end of the temperature scale, the known properties of graphite fabrics are unaffected by liquid nitrogen at —320°F.

Graphite textiles also resist attack by acids, alkalies, and organic compounds, except for those of a highly

oxidizing nature. Moreover, they remain unreactive in contact with many molten metals.

Conduct Heat, Current—The new fabrics have excellent thermal and electrical conductivity, and being in flexible form, are immune to thermal shock. They will impart these properties to non-conducting materials such as plastics and ceramics, and even to other textile materials such as glass cloth. Graphite's well-known lubricating properties also apply to the new fiber and fabric forms.

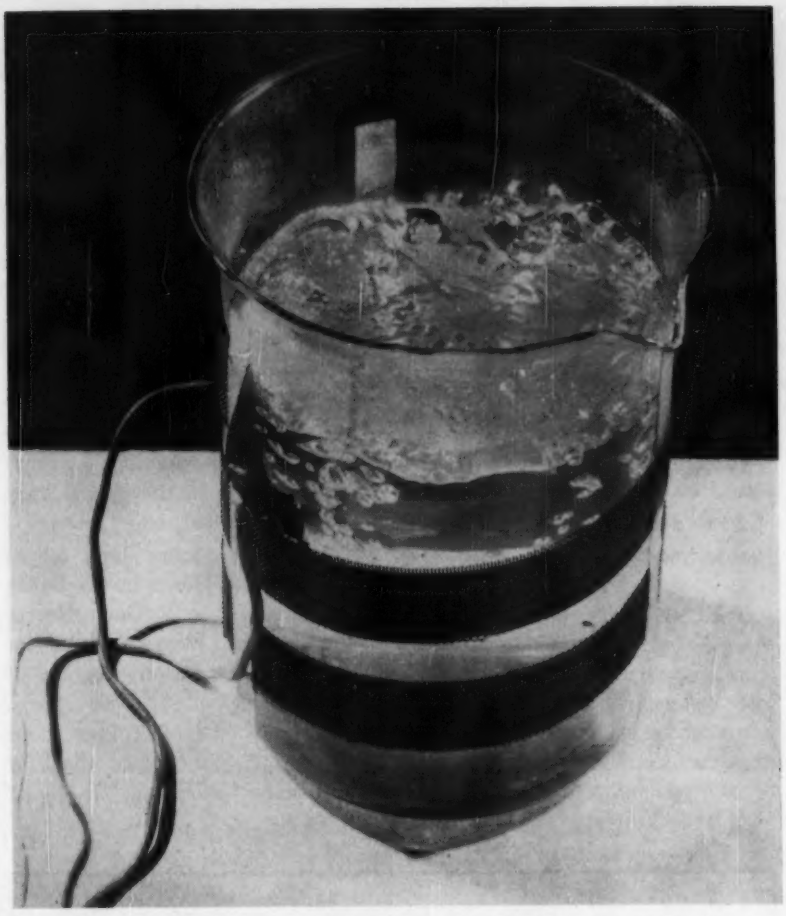
For chemical applications, graphite cloth of the proper mesh is being considered for (1) bag-type filtration of hot, non-oxidizing gases; (2) equipment to handle corrosive fluids; (3) electrostatic precipitators, curtain walls, and flame arrestors.

In the electrical field, flexible graphite-cloth resistance heating elements can deliver heat wherever it is needed, and at either high or low temperatures.

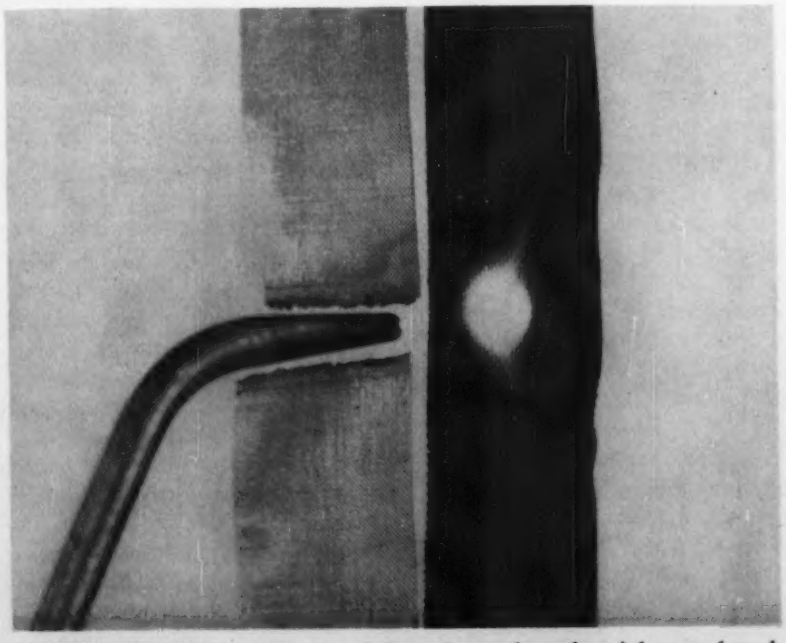
For Home Heating—On the low-temperature side, such elements could possibly be made into wall panel units for space heating, or into heated clothing for a variety of uses. By plating, spraying, or vacuum depositing a metallic coating on the graphite cloth, electrical connections could be made quite easily.

In the electronics industry, graphite fibers (possibly "doped" with boron) might conceivably be used as thermo-electric elements in vacuum tube grids and infrared emitters. Other potential uses: in static eliminators, and as a filament material for incandescent lamps.

Mechanical uses will likely employ the thermal and self-lubricating properties of the graphite fibers to good advantage, as in valve packing and gasket materials for high-temperature seals. Woven conveyor belting for high-temperature processing equipment is feasible, also. And in still another area, a matted form of the material could be used as thermal and/or acoustical insulation.



HOT SPOT: Beaker of water boils vigorously when 700-watt strip of graphite cloth (1-in. wide, 40-in. long) is connected to 110-v source.



WON'T BURN: Oxyacetylene torch flame burns through stainless steel mesh (left) but causes no melting of the graphite fabric behind it.

New Openhearth Practice Links Oxygen, Sprung Basic Roof

By **Oscar Pearson**—Vice President, Operations-Steel, United States Steel Corp., Pittsburgh.

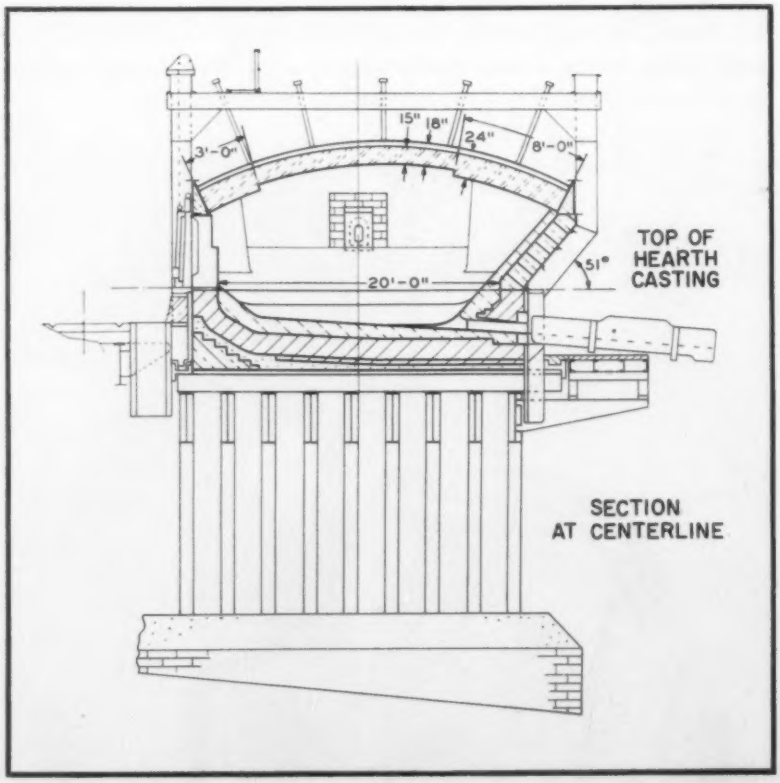
Here is the combination that will make steelmaking's future even brighter and more efficient.

This first-hand account is based on production experience and a distinguished record of "know how" in steelmaking.

▪ The steel industry is faced with the problem of expanding to meet increasing steel requirements. In this connection, openhearth furnaces can be expected to contribute importantly toward increasing steel ingot production.

Because of U. S. Steel's interest in expanding ingot producing facilities, we have carefully examined the output potential of our five (one duplex, four stationary) openhearth shops at the Gary Steel Works.

All five producing shops are of major concern. However, the duplex operation at No. 2 Open Hearth and Bessemer plays a significant part in our expansion program. It is the generator of cold charge metallics for the other four shops and, as such, is a balance wheel for intra-plant stabilization.



PROPOSED FURNACE: This design provides for 380 ton capacity with 1400 sq ft of hearth area. Oxygen roof lances handle decarburization.

Most Likely—In our study of the future course our expansion efforts might follow, we have covered three likely operating methods:

1. Additional tonnage from current duplex operations through provision of additional hot metal capacity and auxiliary facilities.

2. Eliminate the bessemer converters and produce equivalent openhearth tonnage in the three tilting furnaces by using oxygen roof lances to increase production rate. Basic hot metal at 0.85 hot metal to ingot ratio would be charged together with requisite charge ore.

3. Replace tonnage from current duplex operations through vertical oxygen lance practice in new stationary furnaces of about double the capacity of present tilting furnaces. These would tap into two ladles and employ a hot metal charge of 0.50-0.60 hot metal to ingot ratio.

Of the three methods, two (1 & 3) have proved quite practical. The third (2) has been unsatisfactory.

With Improvements—Additional tonnage can be produced in existing equipment when improved auxiliary facilities and increased hot metal are made available. With hot metal held at present levels, ingot tonnage would not be increased.

The trials of vertical oxygen lancing high hot metal charges in the present tilting furnaces were not satisfactory. Available charge ores are not of sufficient quality for such practice. Production rates obtained are not able to replace existing tonnage.

For several years trials have been conducted in steel plants aimed at

the economical use of oxygen for speeding up openhearth reactions. In general, it is fair to say that the price of oxygen must be considered to justify its use in normal periods.

Test Runs — At Gary's No. 2 Open Hearth, high scrap charges are not used and the regenerative system is adequate. The combination makes oxygen enrichment unnecessary. Submerged lances have been used for decarburization of low carbon steels for several years.

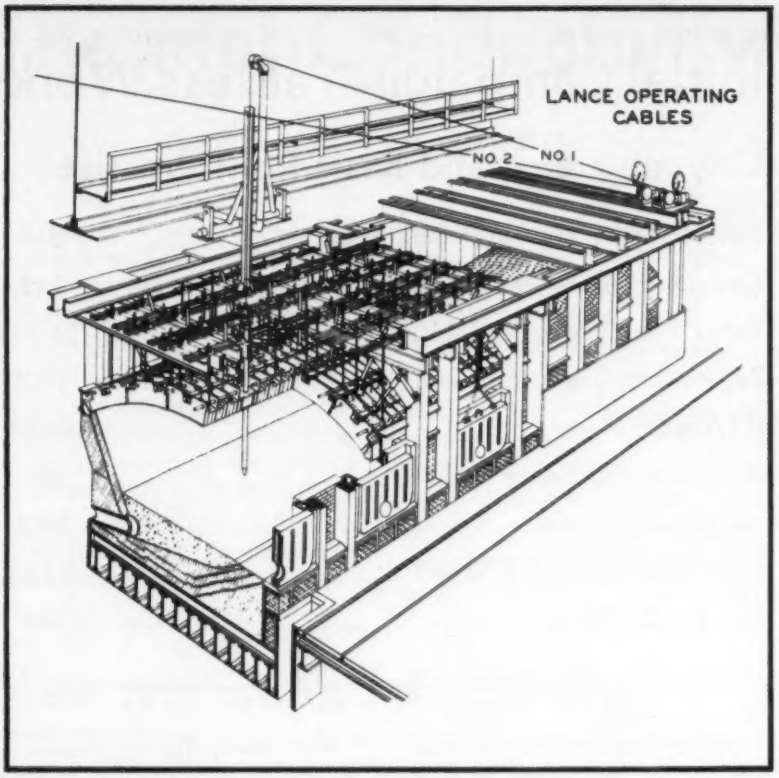
But in view of the success with oxygen roof lances at several of our Open Hearths, including Gary No. 5, it was logical that a trial of a similar practice should be made in one of our tilting furnaces. The object of such trial would be to determine if extremely high basic hot metal charges could be processed directly to ingots at a cost that would compare favorably with conventional blown metal practice.

When results of the trials are compared to statistics of heats made to normal liquid metal practice, here are the results:

1. Overall yield of charged metallics to ingots reduced by 2.1 pct.
2. Production rate reduced by 50 pct.
3. Potential annual production reduced by at least 50 pct.
4. Furnace repair and maintenance costs increased appreciably. The exact amount would have to be determined over a period of time but appears to be at least a 100 pct increase.
5. Fuel costs increased by 75 pct minimum.
6. Overall cost of producing ingots increased appreciably through the significant lowering of overall shop production.

Another Way — With the combination of high cost and reduced tonnage, the lance practice in the tilting furnace shop with present equipment and layout becomes quite unattractive.

On the other hand, we are now getting excellent results in several of our large modern openhearth shops when a proper combination of furnace design, charge metallics, and oxygen practice is used. This justified seeking an alternate method by which Gary No. 2 could be used to provide both necessary ingot tonnage and hot metal for equivalent or additional ingot tonnage for the plant.



SPRUNG BASIC ROOF: Typical of the new furnaces at Fairless Works, its record of roof life is a real engineering feat—399 heats.

Any altered or new operations considered must meet the following minimum requirements:

1. A production rate of at least 42 net tons per hour.
2. A furnace availability of at least 95 pct to maintain a minimum annual production of 350,000 net tons per furnace per year.
3. The ability to use conventional basic iron and available open hearth charge ores in order to show a favorable cost reduction over the present duplex process. This uses low phosphorous ores through the blast furnaces.

New Furnace—Since the present tilting furnaces are constructed on 115-ft centers, it is possible to install large stationary open hearth furnaces with adequate regenerative systems. The present pit building is limited to heats of 180 net tons maximum. This factor and the heavy expenditure required to enlarge its capacity appreciably would make it necessary to tap into two ladles via a bifurcated spout.

A suitable furnace has been designed. With hearth dimensions inside brickwork of 70 ft long by 20 ft wide, this furnace would provide 1400 sq ft of hearth area. At a heat size of 380 net tons, a hearth area of 3.68 sq ft/ net ton would be available. This is considered quite adequate.

Necessary charging machines, cranes, and other facilities would be provided for maximum production rates. Present hot metal handling facilities would be maintained. They are adequate for the reduced hot metal charges.

Other Features — Each furnace

Initial Campaign—Fairless Works

Oxygen Lance and Basic Roof Practice

No. of Heats Per Roof Campaign	**368**
Ave. Heat Size—NT	**342**
Total Tons Produced	**126,052**
Tap-to-Tap Time	**7:59**
NT/Oper. Hour	**43.04**
Hot Metal to Ingot Ratio	**.735**
% Furnace Yield	**85.5**
Fuel Rate—MNet BTU/NT	**2,350**
Cu. Ft. O_2/NT	**439**

would be equipped with front flush arrangement for efficient, rapid removal of slag from the furnace. Metal losses would be minimized by properly locating furnace personnel at the furnace front to observe the runoff during flushing.

Along with new furnaces and auxiliary facilities, the three required advantages can definitely be obtained with the additional installation of two current practices.

Each furnace would be equipped with suitable burners, including oxygen for air enrichment during meltdown. Two oxygen roof lances would be used for decarburization. They would be similar to those installed for the trial on the tilting furnace.

Each lance would contain six openings at 20°-30° from the vertical. The openings would range in size from 7/16 to 9/16 in. The exact angle and opening would be determined by optimum furnace operation and minimum splash. Based on our present practices, a total of about 150 cu ft of oxygen per ton would be employed for combustion aid during meltdown and 450 cu ft per net ton for decarburization.

Basic Roof—Through simultaneous use of a second practice recently developed for application in our furnaces, any reduced furnace availability from the oxygen lance practice is overcome. Depending on individual shop conditions, a future furnace availability of 94 to 96 pct can be achieved through installation of the sprung basic roof with rigid holdups and holddowns.

To illustrate lance practice and basic roof design, a Fairless Works furnace is selected because it best represents furnace size and operating rate needed for planned furnaces in Gary's No. 2 Open Hearth. An accompanying sketch shows a Fairless Furnace with the two oxygen roof lances and sprung basic roof.

Using Oxygen—The oxygen roof lances contain six ½-in. diam holes at 20° from the vertical, arranged symmetrically about the vertical axis. Oxygen is introduced at a rate of 20,000 cu ft/hr per lance. It starts immediately after hot metal addition and continues until the desired carbon level has been reached—a period of about 4 hours.

Pertinent features of the roof design include the use of four 12-in. thick valley and two 15-in. thick rib courses of chemically bonded, internally and externally plated, basic brick.

Placed between the rib rings and the center valley rings are 3/16-in. steel plates cut in five sections to fit the roof contour from front to rear skewback. These are individually hung from furnace steelwork. They are also tied together by steel sections above the horizontal holddown beams.

Note the use of the holddown and 6-in. beams to which they are tightly attached. The entire construction provides maximum rigidity. Once the brick and plates are installed, the centers are removed. This permits the roof to drop slightly. The holddowns are then adjusted to the holddown beams as tightly as possible.

Real Success—Our initial furnace at Fairless equipped with this roof design and the oxygen roof lances gave excellent results during early 1958. Pertinent details are listed in an accompanying table.

After the initial run on Fairless No. 2 furnace, several additional roof campaigns were completed on other furnaces. The same lance practice and roof construction were used. Operating results were similar and roof life reached to 399 heats. Since 206 heats represents a break-even point with former silica roofs, the present life is quite attractive. All furnaces at Fairless Works are now equipped with roof lances and basic roofs.

We consider the oxygen roof lance practice and the sprung basic roof to be among the most significant developments for open hearth furnaces in recent years.

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Measures Thermal Conductivity

Here is a relatively simple set-up that claims an accuracy of plus or minus 5 pct.

▪ Nowadays, more and more materials are intended to operate at elevated temperatures. Logically, we must know more about the thermal properties of these materials.

An apparatus for measuring the thermal conductivity of metals from room temperature to 800°C (1472°F) was recently developed by Westinghouse materials engineers, B. R. Sinwell and J. V. Semon.

Start With Known—For determining thermal conductivity at elevated temperatures, the steady state heat flow method is used. It makes use of a sample whose thermal conductivity is known in order to evaluate a specimen whose thermal conductivity is unknown.

The preferred specimen is a 1-in. diam cylindrical bar, 7 in. long. (A ½-in. diam bar has also been tested successfully.) The specimen is joined to a comparison bar by brazing, soldering, welding or any other method capable of producing a highly efficient thermal joint. The comparison bar is made of "A" nickel (99.4 pct Ni).

The completed assembly is mounted in the apparatus shown in the accompanying sketch. After the chamber is evacuated, heat is applied at the specimen end of the bar assembly. The opposite end is located in a heat sink. Temperature gradient is measured along both bars, and the conductivity value is calculated from these measurements.

Key Principles — This type of test assumes that 1) heat losses from the surface of the bar are negligible, and 2) that all heat input travels by conduction through the specimen into the comparison bar—then to be carried away by the sink.

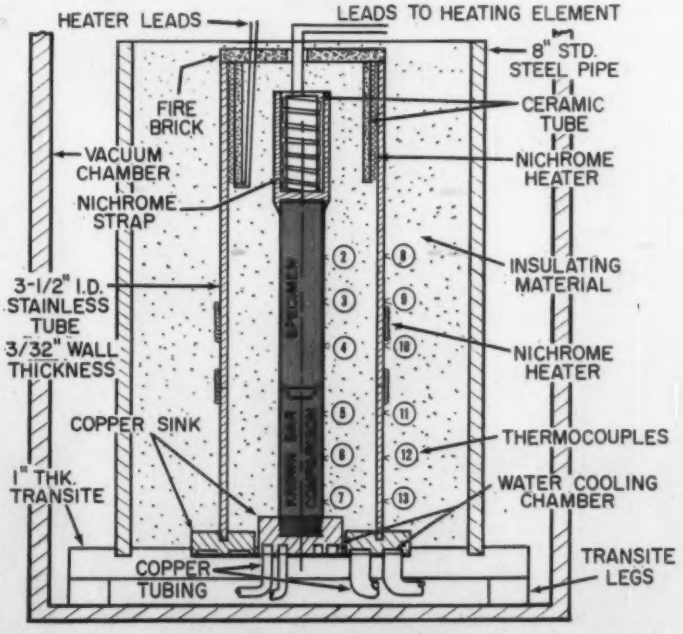
To make the assumption valid, a guard system is used to minimize heat losses. A 4-in. diam tube with heaters spaced along its length is placed around the specimen and sample bar assembly. The entire system is surrounded by a larger 8-in. diam tube. Spaces between the specimen bar and the shields are filled with insulating material.

Thermocouples are spaced along the axial length of the bar assembly to measure the thermal gradient. They are also placed on the first guard shield, directly opposite each thermocouple on the bar assembly.

Accurate Results—Separate heaters are used to heat the end of the specimen and the end of the guard tube. When heat is applied to the specimen, the guard heaters are adjusted so that the thermocouples opposite each other on the specimen and guard are approximately the same temperature.

With heat flow cut off (except by conduction through the specimen and sample bar), a calculation can be made to determine the thermal conductivity of the specimen at any desired temperature. Calculations are based on the equations shown below the accompanying sketch of the measuring setup.

New Measuring Apparatus



START WITH THE EQUATION FOR FLOW OF HEAT THROUGH A BAR:

$$Q = \frac{K_S A_S T_S}{L_C} = \frac{K_C A_C T_C}{L_C}$$

WHERE: Q = RATE OF HEAT FLOW; K = THERMAL CONDUCTIVITY; T = TEMPERATURE GRADIENT; L = LENGTH OF BAR OVER WHICH T IS MEASURED; S = SPECIMEN, AND C = COMPARISON BAR.
SINCE AREAS OF THE SPECIMEN AND COMPARISON BARS ARE EQUAL AND L IS HELD CONSTANT, THE EQUATION REDUCES TO:

$$K_S = K_C \frac{T_C}{T_S}$$

THE VALUE OF THERMAL CONDUCTIVITY (Ks) APPLIES TO THE ARITHMETICAL MEAN TEMPERATURE OF THE TWO TEMPERATURES FROM WHICH Ts WAS OBTAINED.

Press Reduces Tube Diameters Automatically at Both Ends

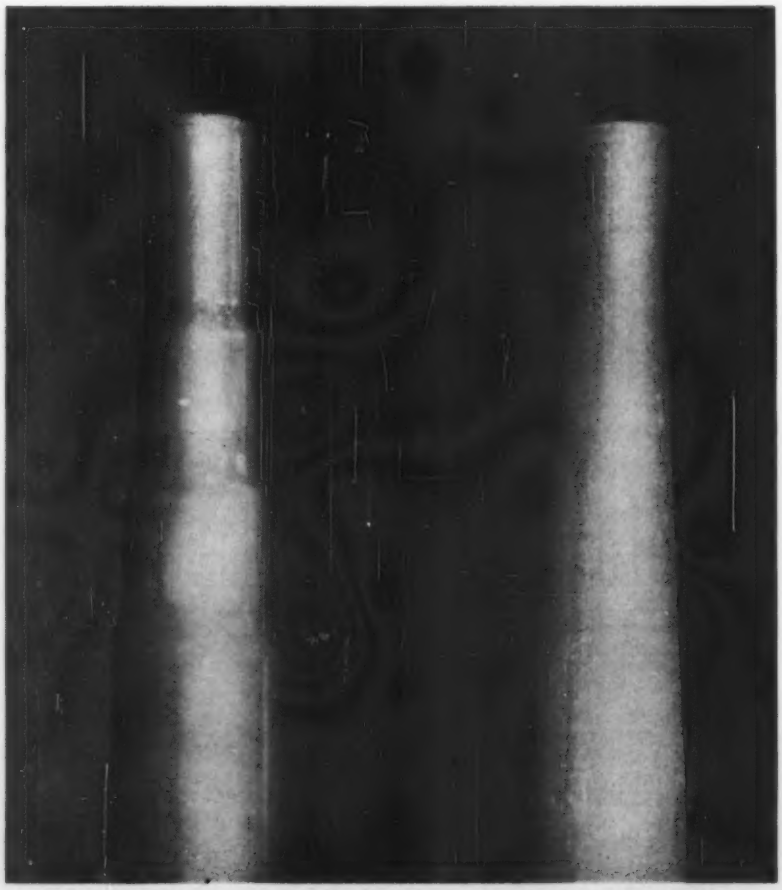
By N. Boraski—Mfg. Engrg. Supervisor, Power Transformer Dept., General Electric Co., Pittsfield, Mass.

Here's another example of the way machine functions can be linked with transfer devices. The result: More work in less time and with less labor.

▪ Are you seeking a faster, more efficient way to reduce tube-end diameters?

General Electric Co.'s Power Transformer Dept., at Pittsfield, Mass., had this problem awhile back. It found the answer in an automatic, double-end tube reducer made by the Elmes Engineering Div. of American Steel Foundries, Cincinnati.

Lengths of steel tubing are key items in the production of power transformer radiators. In preparation for certain welding operations, diameters at both ends of these tubes must be tapered down.



NOW AND THEN: New machine reduces tube ends in a stepped form (left); rotary swaging machine formerly produced a gradual taper (right).

Used Rotary Swagers—Before all radiator assembly operations were consolidated at the Pittsfield plant, tube-end tapering was done with three rotary swaging machines at the Dept.'s Holyoke, Mass., plant.

In planning to switch this tube reduction work to Pittsfield, two questions arose: (1) Were the swaging machines satisfactory from the standpoint of operating cost per volume of production? (2) Could they be conveniently fitted into the Pittsfield production and assembly layout?

Although the swaging machines worked well enough, they had certain operating disadvantages. They were relatively slow, quite noisy, and rather costly to maintain.

Noise Presented Problems—The noise factor was particularly important. It meant that if the three swaging machines were brought to Pittsfield, a special building would be needed to house them. This would mean extra expense and considerable inefficiency in production flow.

Management then considered many alternate methods for mechanized reduction of tube ends. The final choice was the Elmes reducer already mentioned—a single unit to replace the three swaging machines.

This machine is self-contained except for its hydraulic oil pumps. It can be operated semiautomatically or automatically. Because it works at a low noise level and takes up relatively little floor space, it is installed adjacent to the tube-assembly areas. In this location it permits straight-line work flow and mechanized transfer of work to subsequent operations.

Forms Various Sizes—The ma-

chine is flexible enough to form a variety of tube diameters to required sizes in any sequence. Its Carboloy dies show long life, and necessary adjustments are easily made. In operation, the unit performs reliably and produces work of consistently high quality.

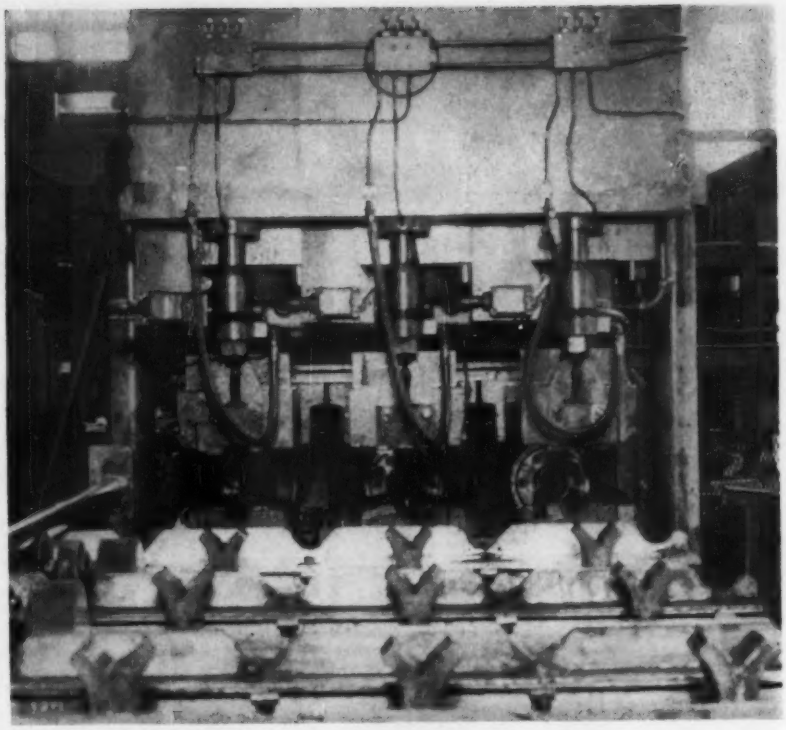
For feeding work to the press, there is a magazine that will hold approximately six 2-in. diam tubes, in lengths ranging up to 160 in. A shuttle feed, which delivers one tube at a time to the machine, has 8 stations, a 4½-in. vertical stroke, and an 11-in. horizontal stroke.

A walking beam mechanism makes up the carriage of the shuttle transfer. Friction rollers position the tubes at the six reducing stations (three for each tube end). Length of the ram stroke controls the amount of tube-end reduction (currently from 2 in. OD to 1¼ in OD). Ejection of full reduced tubes is automatic and at a rate of one every 15 seconds.

How It Works—Steps in one complete cycle of the reducing press are as follows:

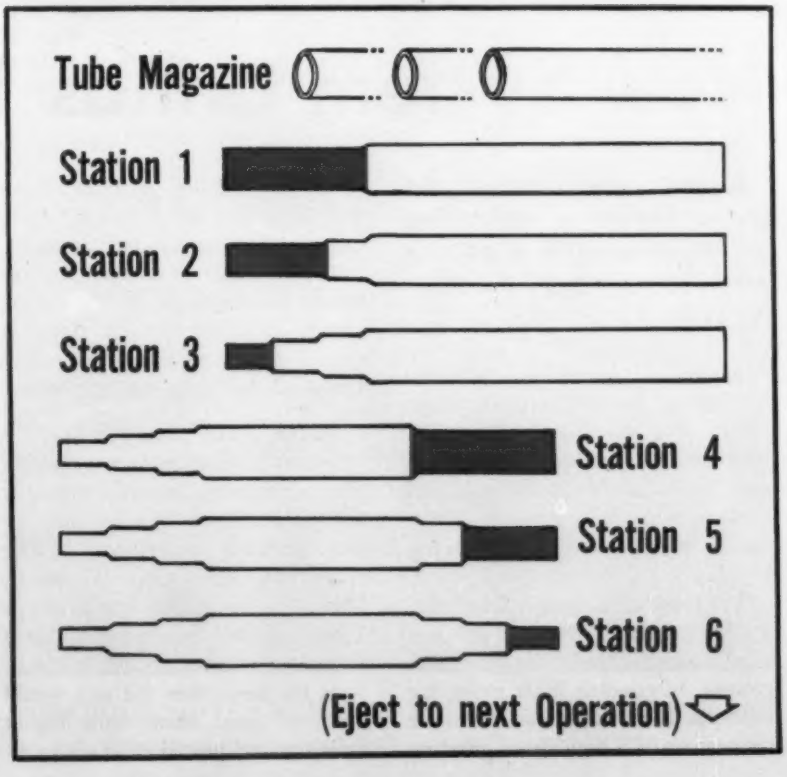
1. Jog tube into first station (rollers).
2. Set machine on automatic and press "Close" button (all rams fully retracted).
3. Shuttle lifts (various valve actions occur).
4. Shuttle moves forward.
5. Shuttle moves down. This movement conditions the next operation.
6. Clamp down. Tube is also dropped from loading magazine.
7. Reducing rams in. (Rams are reversed by tripping of forward limit switches.)
8. Reducing rams out. (Next operation is conditioned when rear limit switches are tripped.)
9. Clamp rams open. (Next operation is conditioned when clamp rams have tripped up stop limit switches.)
10. Shuttle back. New cycle ready to start.

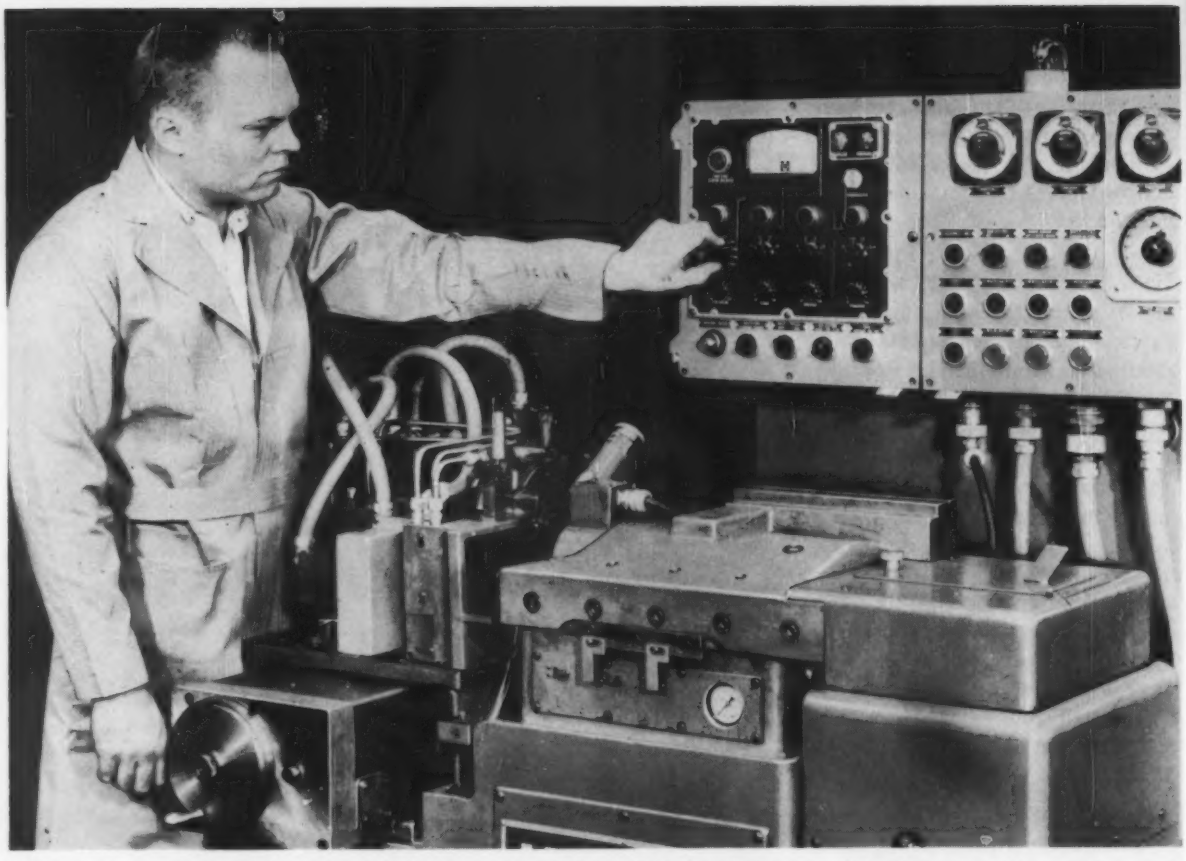
The machine has been a good investment, satisfying high-quality production needs at a low cost.



CARRY FORWARD: Walking-beam shuttle (foreground) moves tubes past two sets of three forming dies. Each end of the machine has one set.

Tubes Move One at a Time





TURNS OUT PRECISION: Special high-speed machine grinds bearing races with extreme accuracy at low cost.

New System Grinds Tiny Parts

A spur to miniaturization, the system features a workholding method designed to speed tiny parts through a precision grinding cycle at low cost.

▪ Specialized tools for fast, accurate machining of miniature bearings open the gate to economical miniaturization of a host of precision products. Miniature precision bearings must be as small as 0.040-in. ID and from 0.050 to 0.625-in. OD.

In producing such sizes, the inside diameters as well as the outside diameters must be precision ground. In grinding inner races, for example, the bearing race must be rotated, while a high speed grinding wheel reciprocates back and forth and feeds into the work to remove exactly the right amount of metal.

In grinding ball tracks of outer races, the principle is the same, except that the curved track is plunge ground with a shaped wheel that feeds but does not reciprocate.

Builder Takes Problem — The problem of developing a precision internal grinding machine specially for the miniature bearing industry was presented to engineers of The Heald Machine Co., Worcester, Mass. The assignment was to devise a machine that would handle these extremely small parts efficiently.

At the same time the unit would have to grind them with higher accuracy and precision. It's a problem of removing the inherent limitations of internal grinders for miniature work.

The key to grinding miniature bearings lies in workholding and work location. A variety of machines used for this type of job have employed either roll-type or shoe-type centerless grinding methods.

Tailor To Job—Roll-type centerless grinding — or any type of specialized internal grinding—has certain limitations if it's not tailored to the job to be done. Precision at higher production rates becomes increasingly difficult, especially as parts get smaller and smaller.

In the shoe-type centerless method, the part to be ground is

rotated with its outside diameter held in contact with hard shoes against a rotating back plate. It insures squareness of ground bore to face.

Since the work is located by a relatively large contact area on the shoes, small irregularities in the outside diameter are much less likely to be produced in the ground bore. An added advantage lies in the squareness between face and ground bore, a natural result of the workholding method.

Key in Workhead—In attacking the problem, the company incorporated the shoe-type centerless principle to the job of efficiently handling parts with inside diameters as small as 0.040 in. Concentrating on the workhead, Heald development engineers came up with a design in which the part to be ground is rotated from both the front and the rear.

Added to the new workholding method are a series of design advances, all incorporated into one system. The wheelheads are capable of operating continuously at speeds said to be well in excess of any other presently available equipment.

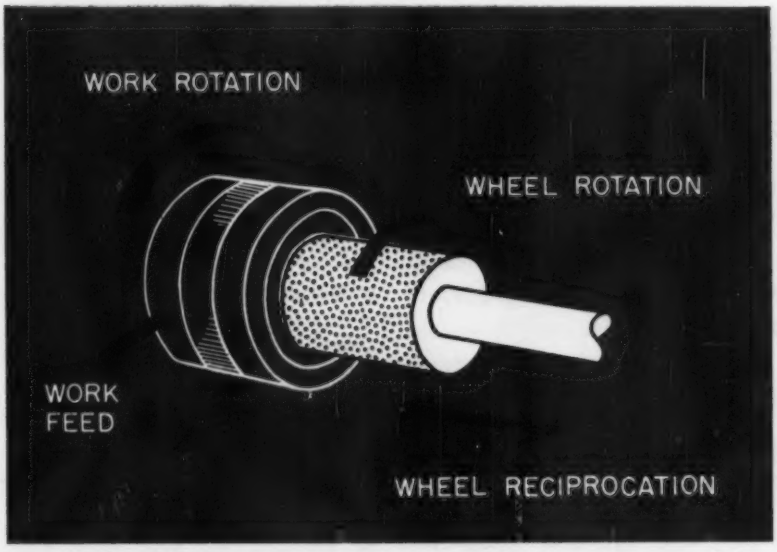
A hydrostatic anti-friction feeding cross slide works through ultra-sensitive electronic control. Electronics also controls sensing and monitoring of other machine functions.

Good on Wheel Life — Precise control automatically improves wheel life by a sensitizing method of automatic wheel-to-diamond relationship, plus compensation for drift. The new Heald Model 090 Centri-Matic shoe-type centerless internal grinder has automatic loading, part sizing and ejection, plus simplified tooling for easy changeover.

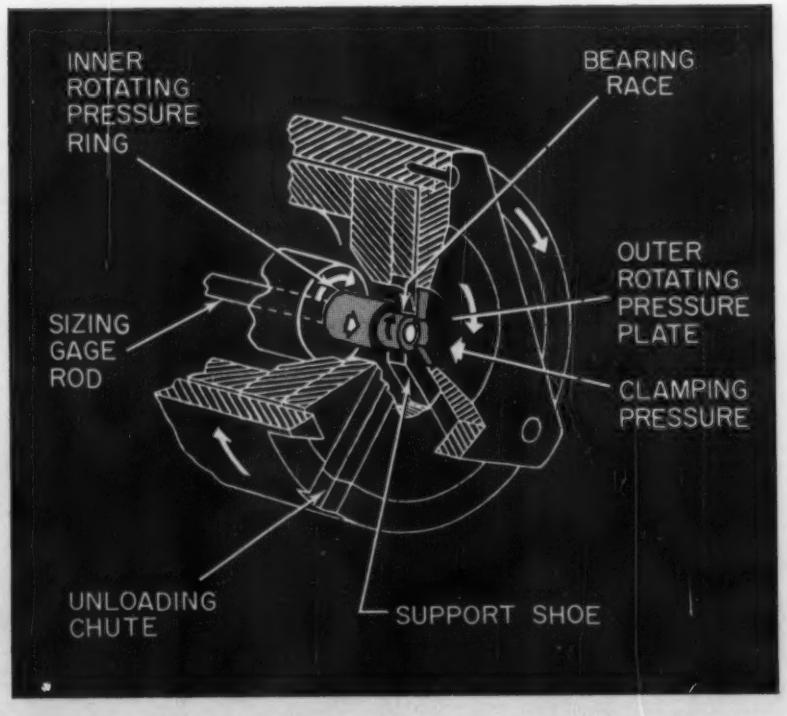
Workhandling capacity of the new machine is a practical minimum of 0.050-in. OD. Surface finish of a 0.040-in. ground bore is 5 microinches.

Cycle time is 13 seconds, and tolerance on size is 0.00015-in. Estimated bore-grinding cost per race, at a total rate of $7.50 per hour, amounts to $0.027.

Although the new machine itself is not miniaturized, it is smaller, more compact than previous machines for this type of work. Nonetheless, its important contribution to the field of miniaturization lies in what it can do: faster, better, lower cost grinding of miniature bearing races.



GRINDING METHOD: While bearing race rotates, a high-speed grinding wheel reciprocates and feeds into work to remove precise amount of metal.



WORKHOLDING TRICK: Rotating workpiece is held from both front and rear. Support shoe in contact with outside diameter insures squareness.

Fluoroscopy Proves Fast Method In Checking Honeycomb Panels

By W. R. Bear—Design Engineer, and W. S. Diehl—Non-Destructive Inspection Specialist, Convair Div., General Dynamics Corp., Fort Worth, Tex.

Aircraft panels meet severe operating conditions; inspection methods have to keep pace.

Here an aircraft builder makes fluoroscopy bear the burden of quality control.

It eliminates costly processing and interpreting of film.

▪ New challenges in the field of non-destructive testing turn up in the building of the B-58 Hustler bomber. The supersonic aircraft, designed for speeds close to Mach 2, poses temperature and structural problems exceeding previous allowable limits.

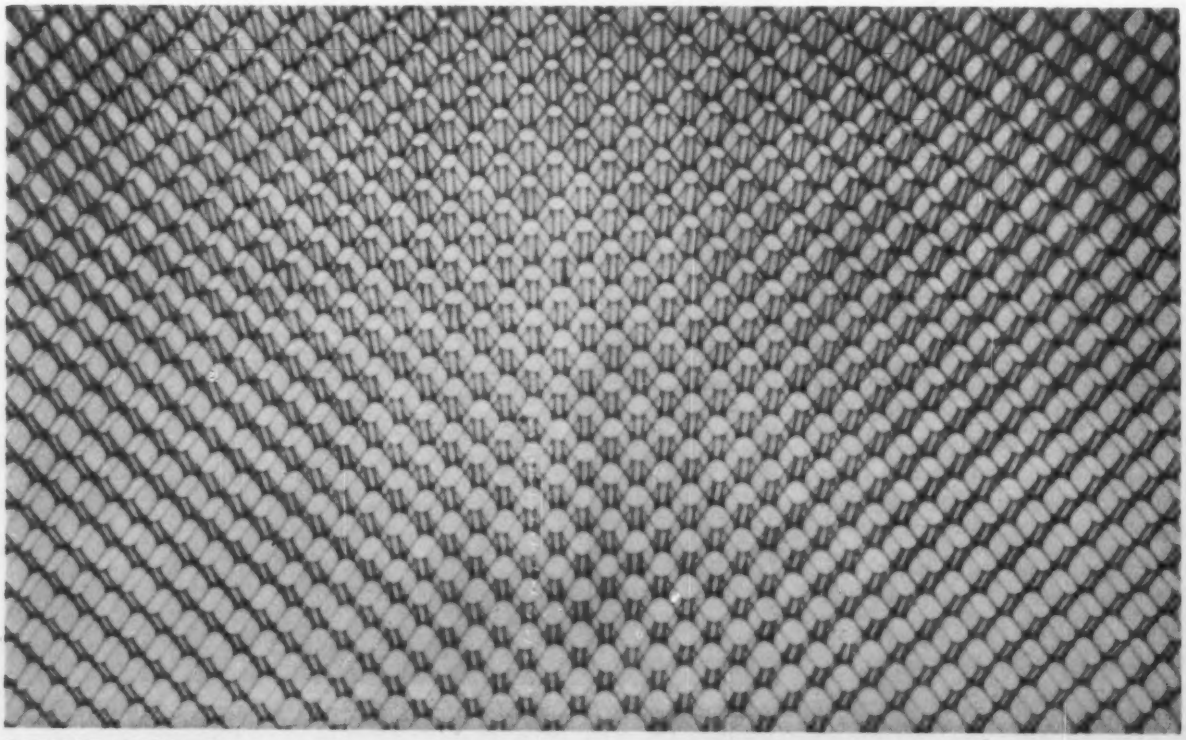
To meet these conditions, the builder, Convair, Fort Worth, developed a brazed stainless-steel honeycomb sandwich panel. This type of construction presents two major problems.

The first has been to solve the various brazing techniques in fabricating a high-quality panel. The second is to provide a method of nondestructive inspection of finished panels.

Start with Radiography—It's the high operating temperatures and stresses that demand rigid inspection of internal brazing quality. Of the various methods considered, Convair chose radiography. It affords the opportunity to look inside each assembly. In addition, this method supplies a permanent record, an important factor in developing a new type of construction.

With radiography in effect, techniques were developed to obtain exposures for adequate panel inspection. For about three years, radiography remained the best means of insuring quality.

Despite gradual reduction in number of exposures per piece, radiographic inspection costs continued to be extremely high. In an effort to



DOUBLE FILLETS: Setup resolves double surface fillet formation. Visual presentation is easily photographed.

reduce costs without sacrificing quality control, Convair turned to fluoroscopy.

Direct Viewing—What is fluoroscopy? It's defined as the process of examining an object by direct observation of the fluorescence of a screen caused by X-rays transmitted through the object. Convair, as it did in setting up radiographic inspection, went through extensive research to develop fluoroscopy for inspection of the brazed panels.

Since basic exposure techniques for radiography apply to fluoroscopy, major effort was directed towards improvement of fluorescent-screen image quality. Since the existing fluoroscopic installation was inadequate for this type of inspection, a series of image evaluations was conducted.

It proved that the existing equipment had the potential for the job, if limiting factors were dispersed or at least minimized. Contacts with leading men in the field of fluoroscopy and manufacturers of X-ray tubes, fluorescent screens and barrier windows helped eliminate restricting factors.

Reduces Scattering — After obtaining an improved fluorescent screen, Convair developed a lead cylinder to reduce scattered radiation. In addition, the viewing room was completely light proofed. These advancements, coupled with proper part positioning, improved the image sufficiently for inspection of brazed panels.

The fluorescent screen is a prime factor in any fluoroscopic installation. While its expense is negligible in relation to X-ray tubes, handling equipment and barrier windows, selection of the right screen for each particular job was subject of another evaluation program. For inspection of brazed panels, where fine line detail is required, a screen with very low unsharpness factor is mandatory.

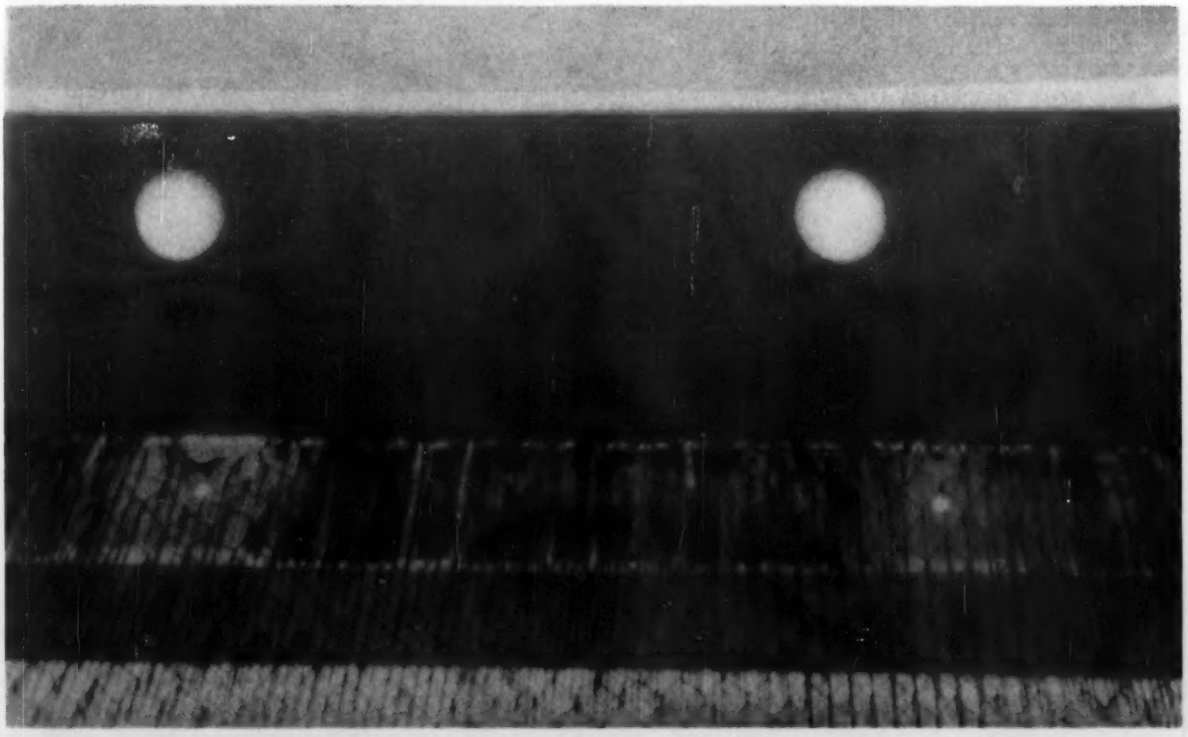
Image Potential — The X-ray tube must have the potential to penetrate all materials to be inspected. It must be strong enough to bombard the fluorescent screen with enough X-ray to produce a shadow image.

For best detail and least penumbra image, the tube should have a point focal spot (less than 1.0 mm). Rotating-anode water-cooled tubes can be purchased off the shelf with focal spot sources as small as 0.3 mm.

Necessary for safety, the barrier window provides visibility with protection. A 1 x 6 x 8 in. lead silicate window does the job. Although partially resistant to radiation darkening, it has required baking out in the sun several times, a process that returns most of its transparency.

Stress Handling — Remote positioning of parts and tubes helps get efficient production in applying fluoroscopy to brazed panels. Without leaving the viewing room, the operator is able to place the panel and tube in various relationships for proper exposure.

Another prime factor is the relationship between barrier window, fluorescent screen, panel and X-ray tube. Correct adjustment produces



RESOLVE DEFECTS: Unbrazed areas between core ribbon and vertical leg of edge member stand out clearly.

a better image. Defective areas can be resolved and accurately located.

Since brazed panels are subject to specifications, size and location of all effective areas must be accurately outlined. Convair's system uses movable lead shutters, similar to ordinary, radiographic shutters.

Trace Defect—When a defect is located, the shutters are moved in to outline the extremes of the area. Then the barrier window and screen are moved aside automatically shutting off the X-ray circuit. This permits tracing of the outline formed by the panels.

If a permanent record of defective areas is desired, a camera can be mounted above the barrier window. When a defect turns up, the camera is swung down in position. Times for exposure vary in proportion to the brightness emitted from the screen.

A phase of fluoroscopy that receives much discussion is the selection of viewing operators and method of qualification. Convair's program is to use inspection personnel who have been interpreting radiographic exposures of brazed panels for several years.

Experience Plus School — These inspectors have gone through schooling in radiographic safety procedures, panel assembly layup, brazing processes and defect identification. With the employment of new personnel, a regular training program will be in order.

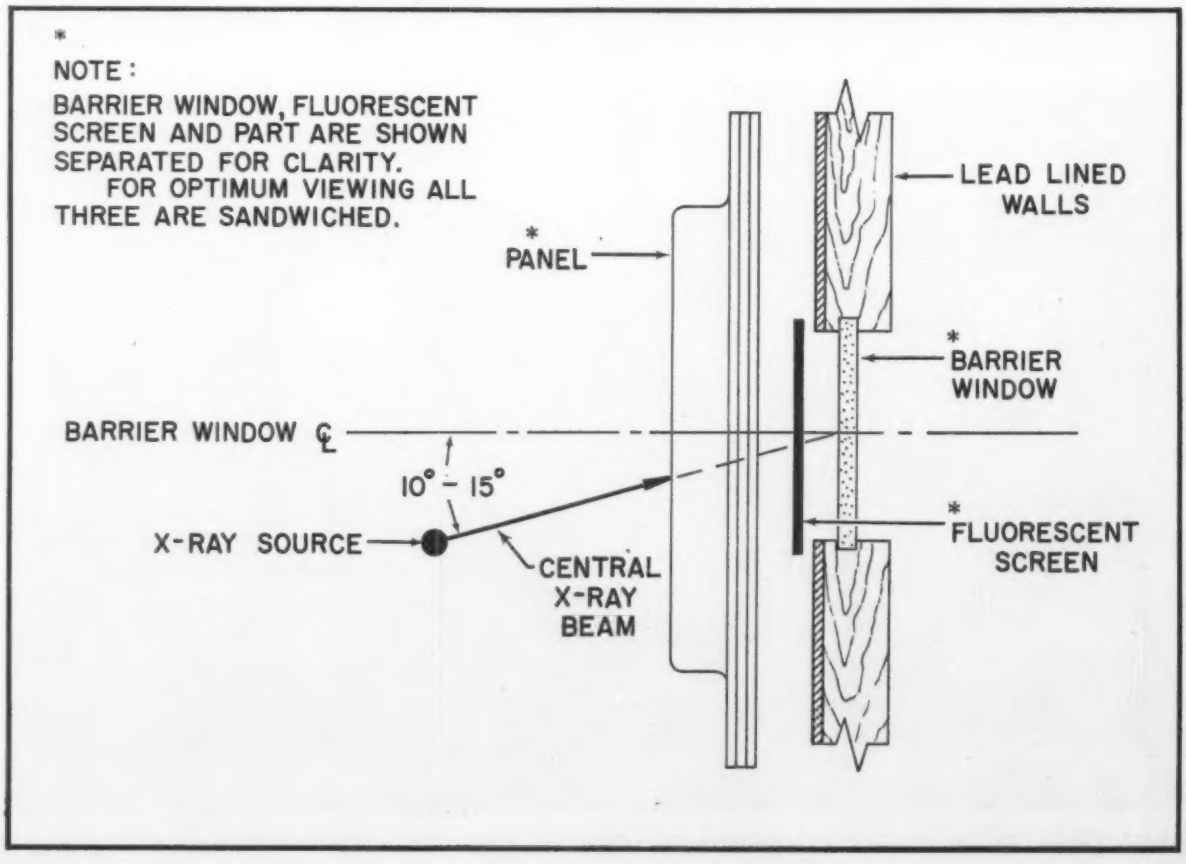
Since the job requires a high degree of alertness and attention to details, working conditions and comfort are a careful consideration. The red-lighted viewing room is well ventilated.

Voice Circuitry — Controls for fluoroscopic and handling equipment are located convenient to the viewing window. A voice communication system between viewing room, handling room and adjacent area eliminates the need for leaving the viewing window to give directions on panel handling. A scheduled alternation of jobs with the handling-room inspector minimizes eye fatigue.

To aid in resolving thicker sections of honeycomb construction, electrically enhanced viewing systems are being investigated. These image aids are approaching the sensitivity required and should in the near future supply answers to many more inspection problems.

High intensity fluoroscopy for inspecting brazed honeycomb turns out to be a cost saving tool. Also, as higher output tubes with smaller focal spots are produced, and improved image amplifiers and finer-grain screens are developed, new uses will be forthcoming.

Production Method Features Sandwich Setup



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One of the unique features of this Wheelabrator Super Tumblast is the automatic loader, designed to handle two different sizes of tote boxes. By handling one large tote box or two small ones at the same time, it has substantially eased work-handling problems.

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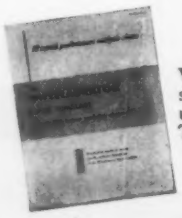

Write for this illustrated report of savings actually achieved through use of the Wheelabrator Super Tumblast. Ask for catalog 145-D.

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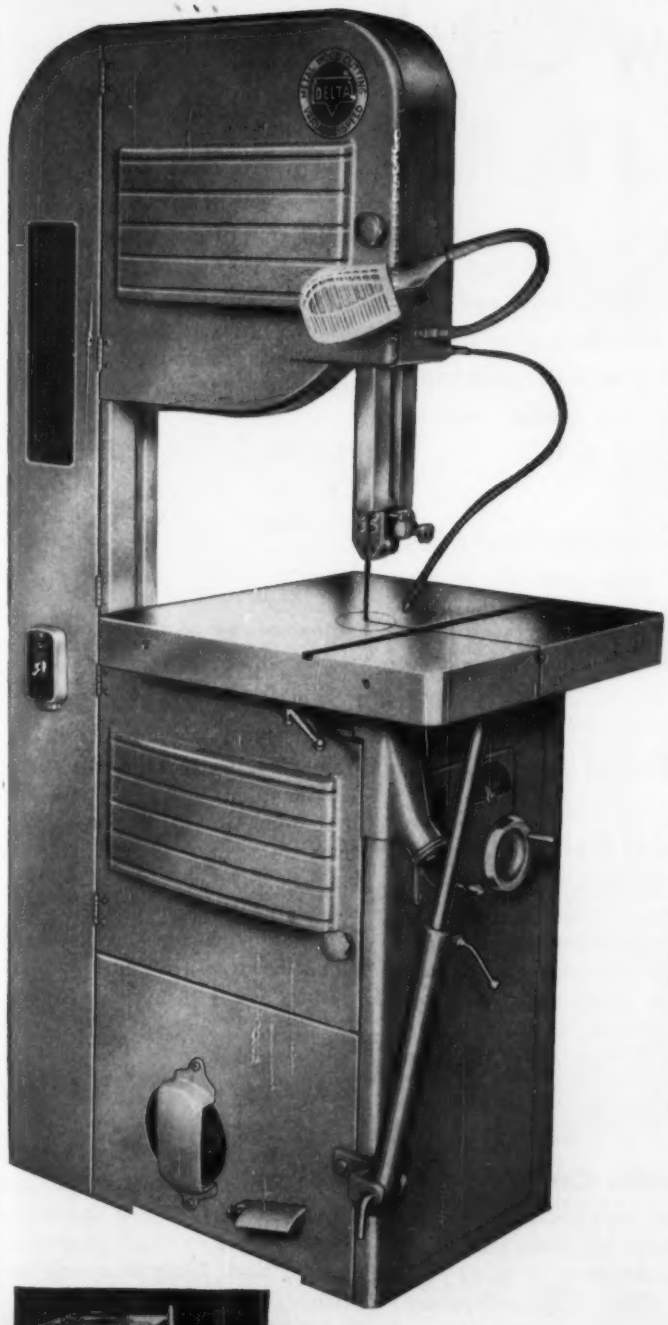

20" metal-wood *variable speed* BAND SAW

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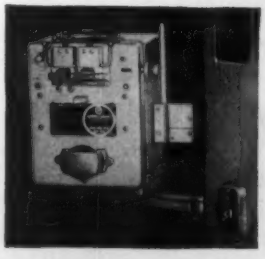

BLADE WELDER, including shear and grinder, shown on No. 28-462. Bracket mounted on 20" Band Saw for machine-side use. (Optional accessories)

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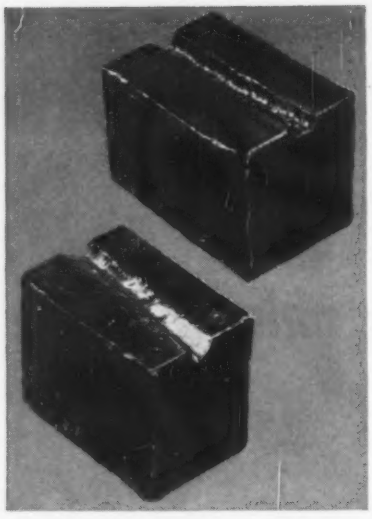

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FREE TECHNICAL LITERATURE

New Catalogues And Bulletins

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 117.

High-Strength Locknuts

Lightweight locknuts for missile and related applications are described in a bulletin. These locknuts are rated at minimum tensile strengths of 140,000 psi plus at 1200°F. (Standard Pressed Steel Co.)

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Low-Cost Gear Checker

A bulletin describes a low-cost, compact gear checker designed for roll-checking a wide range of gear sizes. The checker uses master gears on a spindle, and indicates rolling errors on a dial gage in increments of 0.0005 in. (Michigan Tool Co.)

For free copy circle No. 2 on postcard, p. 117

Automatic Controls

Use of automatic electronic power controls for power generating stations is described in a 12-page bulletin. (The Cooper-Bessemer Corp.)

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Diamond Wheel Catalog

A revised, expanded catalog lists synthetic and natural diamond grinding wheels, including many new items. A table of recommended specifications for grinding carbide is included. (Simonds Abrasive Co.)

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Plastic Exhaust Ducts

A folder describes the use of thermoplastic ducting systems to combat corrosion resulting from exhausting alkali and acid fumes. (American Agile Corp.)

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Long-Lift Air Hoists

Compressed - air - operated hoists are described in a bulletin. Capacities run from ¼ to 12½ tons, and lifts, from 10 to 150 ft. A great range of speeds in operation is available. These hoists are adaptable to many uses, including hazardous environments where electricity cannot be used. (Detroit Hoist and Machine Co.)

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Stainless Steel Catalog

A 36-page handbook gives detailed information on this company's line of stainless steel sheet and strip grades. Data on corrosion resistance, physical properties, finishes, and fabrication are included. (Washington Steel Corp.)

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Enclosed Conductors

Two types of electrification systems, one bar, the other, wire, are both enclosed in vinyl. A 24-page pamphlet describes these closed-

duct systems that overcome the hazards of open-type high-amperage systems usually used for cranes, hoists, and runways. (Duct-O-Wire Co.)

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Pneumatic Screwdrivers

A new line of pneumatically operated screwdrivers and nutsetters is described in an illustrated bulletin. (Airetool Mfg. Co.)

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Perforating Punches

A data sheet, "Tentative Standards for Heavy Duty, Head-type Punches," gives complete specifications for punches covered by new ASTE Standard No. 34-92000. A new punch line by this company matches these standards. (Dayton Perforators, Inc.)

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Induced-Draft Fans

Detailed specifications of a complete line of induced-draft fans are presented in an illustrated 16-page bulletin. (Lehigh Fan & Blower Div., Fuller Co.)

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Tap Extensions

Saving the cost of extra-length taps, a new line of 5- and 8-in. tap extensions is described in a catalog sheet. These extensions are designed for hand or machine tapping operations. (The Walton Co.)

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Underhung Cranes

A pamphlet describes a heavy-duty underhung crane system especially adaptable for long, clear-span buildings. A new design concept is utilized. This system spans up to 300 ft and carries up to 50 tons. (Crane Hoist Engineering Corp.)

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A synthetic colloidal graphite is described in a brochure. This material performs the usual addi-

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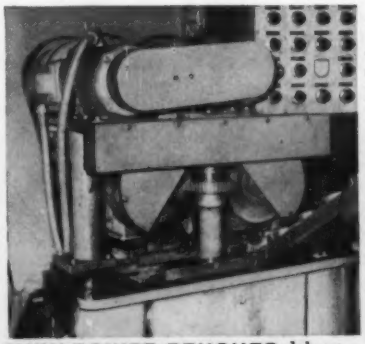

TWIN POWER BRUSHES deburr and edge-blend these parts on 7-second cycles. Osborn 6" Monitors Brushes—operating at 1750 rpm—do the job at high production rates. Quality is excellent . . . cost is low.

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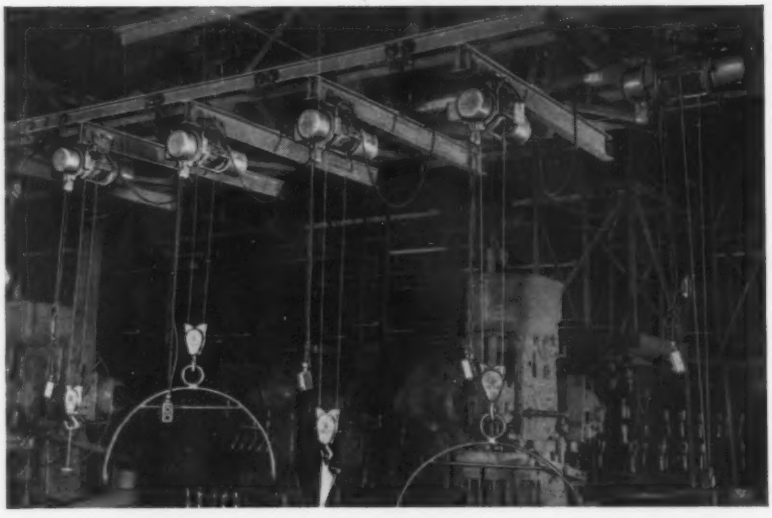

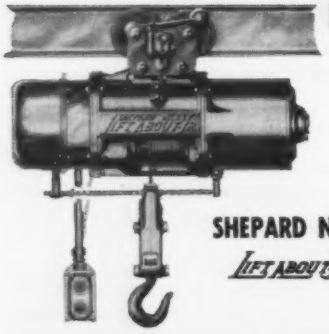

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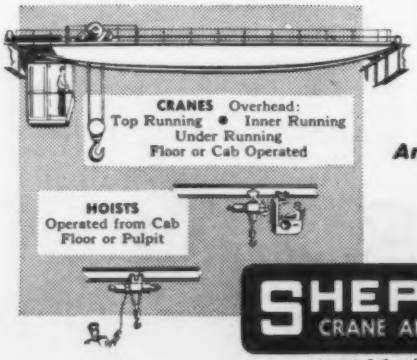

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FREE LITERATURE

tional lubrication functions of graphite as an additive in oil or other carrier. It has the advantage of containing none of the impurities of natural graphite. (King Graphite Products, Inc.)

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Plugs and Receptacles

A 27-page catalog describes plugs and receptacles for electric furnace installations and for a wide range of other industrial applications. Automatically mating plugs and receptacles for bell-type furnaces are included. (Albert & J.M. Anderson Mfg. Co.)

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Powder Metal Parts

A four-page illustrated brochure provides information on reducing costs of bearings, bushings, and parts such as gears by using powder metal components. The bearings are cheaper than bronze and are suitable where corrosion is not a problem and mechanical strength is within tolerable limits. Containing oil, they are self-lubricating. (Amplex Div., Chrysler Corp.)

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Galvanized Steel Sheets

Comprehensive data on the procurement of galvanized steel sheet for industrial applications is presented in a 36-page buyer's manual. Factors governing properties, applications, specification, purchase, and maintenance are included. (American Zinc Institute, Inc.)

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Tape Recorder

A lightweight, precision magnetic tape instrumentation recorder is described in an eight-page brochure. Complete specifications are presented. The recorder/reproducer contains seven channels, weighs only 65 lb, and operates on 250 w. (Precision Instrument Co.)

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Piping Products

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Plastic Tooling

To help foundries reduce pattern cost and produce duplicate patterns in the shortest possible time is the aim of a data bulletin. It describes plastic tooling foundry equipment. (Tooling Div., Houghton Laboratories, Inc.)

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Casting Alloys

Data on Revere primary aluminum casting alloys is contained in an 8-page brochure. Covered are: sand casting, permanent mold casting and die casting alloys. (Federated Metals Div., American Smelting and Refining Co.)

For free copy circle No. 23 on postcard

Aluminum Schools

A 64-page booklet is available to metal fabricators interested in aluminum products common to school applications and construction. (Kaiser Aluminum & Chemical Sales, Inc.)

For free copy circle No. 24 on postcard

Centrifugal Casting

Reviewed in a folder is a broad range of centrifugal cast component parts and assemblies. Castings come in many metals. These include: tin, aluminum and manganese bronzes; brass; silicon bronzes; special alloys; Monel metals and Ni-Vee bronze. Each alloy (with Federal, military, SAE and ASTM specifications) is clearly charted. (Centrifugally Cast Products Div., The Shenango Furnace Co.)

For free copy circle No. 25 on postcard

Locknut

Featherweight locknuts are shown in a bulletin. The nuts combine high strength-to-weight ratio with good fatigue characteristics and reusability. (Standard Pressed Steel Co.)

For free copy circle No. 26 on postcard

Punches, Dies

Round, square and oblong punches, dies and rivet sets are covered in a 50-page catalog. (Geo. F. Marchant Co.)

For free copy circle No. 27 on postcard

Spring Steel

In handy form, a 43-page booklet lists a wide variety of Swedish cold rolled spring steels. (Uddeholm Co. of America.)

For free copy circle No. 28 on postcard

Stainless Steel

Dozens of architectural stainless steel ideas are included in a colorful 50-page booklet. Curtain wall design and compatibility of stainless with other materials are featured. (Allegheny Ludlum Steel Corp.)

For free copy circle No. 29 on postcard

High-heat Metals

Plasma arc services for users of metals in the high temperature range are offered in an 8-page booklet. Services involve use of a plasma arc torch. This operates up to 30,000°K. The company can coat or fabricate shapes for you of ultra-hard materials such as pure tungsten, molybdenum, zirconium, tantalum, stainless steel, other

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. **5/7/59**

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FREE LITERATURE

metals. (Linde Co., div. of Union Carbide Corp.)

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Surface Grinding

Subject of a bulletin is a new saddle control for the Taft-Peirce No. 1 precision grinder. It describes improvements in both accuracy and time saving. (Taft-Peirce Mfg. Co.)

For free copy circle No. 31 on postcard

Bearing Units

Pages 12 and 13 of a catalog describe a new line of take-up units. These combine advantages of modern anti-friction bearings with an "unbreakable malleable housing." (Browning Mfg. Co.)

For free copy circle No. 32 on postcard

Electric Distribution

Low-voltage distribution equipment is presented in a condensed buying catalog. Its 84 pages cover: circuit breaker load centers, fuse puller panels, safety switches, wireway, molded-case circuit breakers and enclosures, lighting panelboards, distribution panelboards and busway. (Distribution Unit, General Electric Co.)

For free copy circle No. 33 on postcard

Reducers

All-steel, helical gear, all-motor and integral motor reducers are covered in a 28-page bulletin. Units use NEMA standard motors from 1 through 75 hp. (The Falk Corp.)

For free copy circle No. 34 on postcard

Tracing Lathe

An 8-page brochure describes a new tracer lathe. It describes the machine's automatic tracing cycle. (Jones & Lamson Machine Co.)

For free copy circle No. 35 on postcard

Industrial Gas

A research report discusses regenerative and recuperative devices for industrial gas burning equipment. It shows there's an area of smaller furnace sizes where heat recovery can pay off. (American Gas Assn.)

For free copy circle No. 36 on postcard

Air, Hydro Cylinders

A 16-page brochure deals with hydraulic and pneumatic cylinders and related products. It introduces a new concept in hydraulic valve panel fabrication by building block components. (Petch Mfg. Co.)

For free copy circle No. 37 on postcard

Swiss Lathes

Distance between centers on a screw cutting lathe shown in a 4-page bulletin is 18 in. Also covered are other lathes and an electric individual drive. All are Swiss-made. (Arthur Loeffel Co.)

For free copy circle No. 38 on postcard

Check Valves

For gases, vapors, liquids or cryogenics, two new check valves are featured in a bulletin. One fills 99 pct of jobs; the other is for very severe conditions. (Sealol Corp.)

For free copy circle No. 39 on postcard

Arc Welders

AC and AC/DC arc welders are reviewed in a 4-page folder. It details a way to "pay for no more than you need" of welding features. (Lincoln Electric Co.)

For free copy circle No. 40 on postcard

Hydraulic Equipment

Hydraulic units outlined in an 8-page brochure include: rugged pumps, versatile valves, cylinders and vane motors. (Hoen Hydraulic Corp.)

For free copy circle No. 41 on postcard

Ball Valves

Venturi-flow ball valves are presented in a data sheet. They're recommended for corrosive-fluid handling. (Waldorf Fluid Systems Div., F. C. Huyck & Sons).

For free copy circle No. 42 on postcard

Goose Lake Ladle Brick

. . . on the job where you need it—when you need it!

Goose Lake Ladle Brick, produced only 55 miles from Chicago at famed Goose Lake, provides three important cost-saving factors for steel plants. *Fast, direct to job deliveries* by truck or train provides an important savings realized through the elimination of transit delays, demurrage, storage and rehandling . . . *available from stock for immediate delivery*, permitting you to save by maintaining low, flexible inventories . . . and, of course the most important savings is the *low delivered cost* offered by Goose Lake Ladle Brick. Write or phone today for a quotation . . . it should provide an "eye-opening" cost comparison.

Goose Lake Fire Brick is a dense, well-burned plastic-fire clay brick that provides excellent resistance to slags, spalling and abrasion. Strict quality-controlled production and excellent on-the-job performance has won continued specifications by leading steel men for Goose Lake Ladle Brick. Ideal for iron and steel ladles, cupolas, and general intermediate heat-duty requirement.

ILLINOIS CLAY PRODUCTS CO.

Main Office—Barber Building, Joliet, Illinois
Sales Office—208 South LaSalle Street, Chicago 4, Illinois

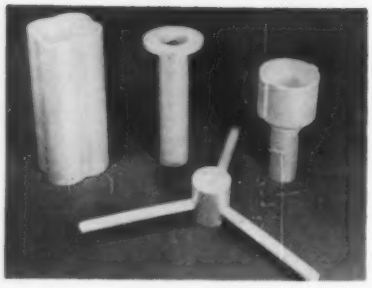
MANUFACTURERS OF: GOOSE LAKE Fire Brick, Ground Fire Clay, Fire Clay Flour; GRUNDITE Bond Clay; FIROX; THERM-O-FLAKE Insulation Coating, Brick, L.B. Block, Concrete; CHEM-BRIX, Silica, Carbon.

New Materials and Components

Side-Transfer System Saves Time and Space

A standard fork truck attachment for side transfer of loads makes possible fast, economical handling of materials. Generally wasted aisle space is cut 50 pct and more by eliminating the truck's 90° turn. Thus the years-old problem of material handling and storage where more aisle space is required than actual storage area used, is solved. The aisle required is now only inches wider than the maximum load width itself. This system handles all normal fork-truck loads. Storage capacities are increased up to 60 pct. (Equipment Mfg., Inc.)

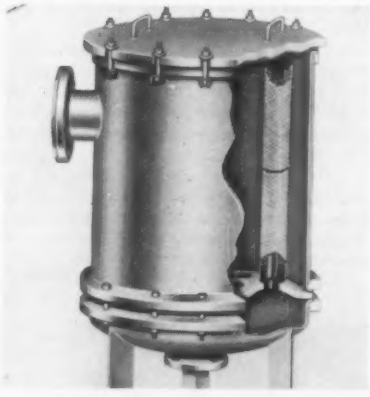
For more data circle No. 43 on postcard, p. 117



Lateral Impact Extrusion Makes New Parts

A new metalworking technique —lateral impact extrusion — is available for making aluminum parts. "Lateral" refers to the direction of metal flow in this modification of the impact process. Heretofore, impacts were produced by metal flow up around a punch, down into a die, or a combination. Now metal can be made to flow outward from direction of impact stroke. Parts with lateral extensions, such as spokes, can be produced with close-tolerance forged strength. (Aluminum Co. of America)

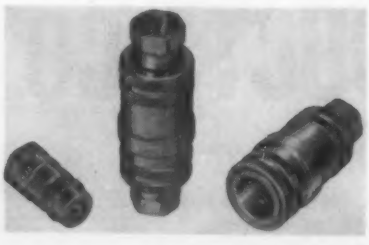
For more data circle No. 44 on postcard, p. 117



Electroplating Filter Is Easy to Maintain

A new rubber-lined steel filter for electroplating has a swing-bolt cover to simplify replacing of elements, and a center bottom outlet to facilitate cleaning. By loosening the cover bolts, the cover is removable for access to the honeycomb filter tubes for changing. The bottom outlet allows quick, easy cleaning of the entire vessel, by addition of a "T" connection with a drain valve. Choice of filter tubes includes cotton fibres with nickel or stainless steel cores for acid, and plain steel or nonmetallic cores for cyanide solutions. The filter is available in six sizes for capacities up to 18,000 gph. Other models are designed for larger capacities. Plain or stainless steel filters are also available. (Commercial Filters Corp.)

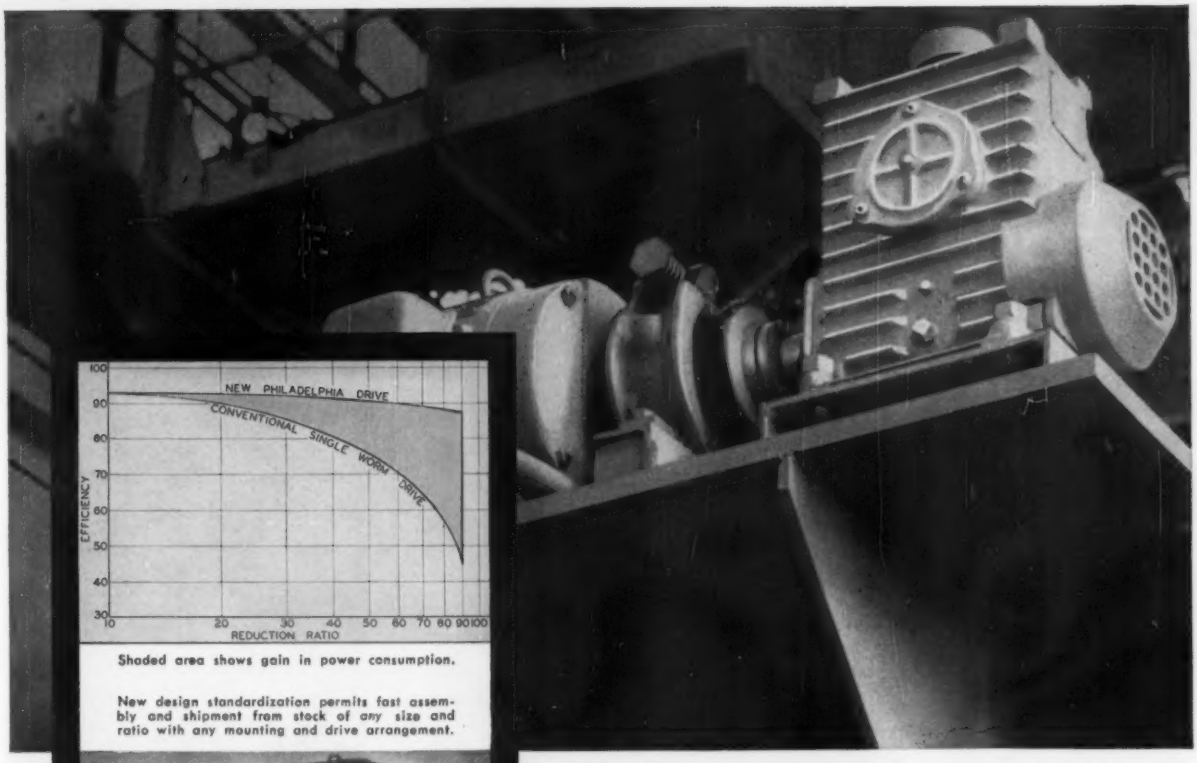
For more data circle No. 45 on postcard, p. 117



Coupler Operates under Full Line Pressure

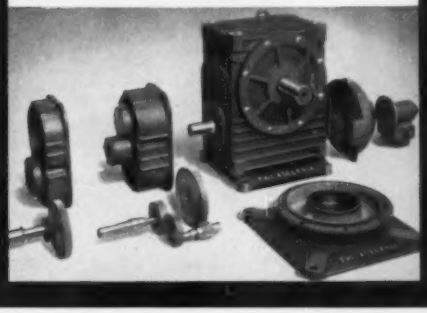
A new quick-disconnect coupler locks or unlocks at full operating pressure. Flow characteristics are excellent, and valve and seal action are positive. Capacities of ½ and ¾ in. are available, with seals suitable for fluids or pneumatic use. Temperature range is from —40° to 250°F, and operating pressures exceed 7500 psi. The locking mechanism is simple and dependable. (The Bruning Co.)

For more data circle No. 46 on postcard, p. 117



Shaded area shows gain in power consumption.

New design standardization permits fast assembly and shipment from stock of *any* size and ratio with any mounting and drive arrangement.



NOW get new efficiency new savings in weight and space in worm gear drives

New high efficiency. These new drives offer efficiencies never before available in worm gear drives. Helical attachments for double and triple reduction units combine the efficiency advantage of helical gearing with the high ratio advantage of worm gearing. You save on power consumption . . . operating temperatures are lower . . . gearing lasts longer.

New high capacity. This is not just a re-rated line. Improved tooth forms, precision ground alloy steel worms, special high strength bronze gears, sturdy housings, precision ground helical gearing . . . all mean higher capacity in less space. In fact, you get space savings to 50% . . . weight savings to 60%. Or, you can handle loads up to 80% greater in the same space.

New flexibility. These new heavy duty high efficiency Philadelphia drives have a degree of flexibility never before available. One basic housing design can be combined with standardized horizontal and vertical mounting bases, worm gearing, single and double helical attachments, and fans, for any drive and mounting arrangement in the exact size and ratio to meet your requirements . . . standard or special. Torque control attachments for all sizes are available from stock for applications demanding overload protection. Ratios from 5⅛ : 1 to 1212 : 1. Center distances from 3″ to 21″. Write for catalog information.

PHILADELPHIA GEAR CORPORATION
Erie Avenue and G Street • Philadelphia 34, Penna.

philadelphia gear drives

Offices in all Principal Cities • Virginia Gear & Machine Corp., Lynchburg, Va.
INDUSTRIAL GEARS & SPEED REDUCERS • LIMITORQUE VALVE CONTROLS • FLUID MIXERS • FLEXIBLE COUPLINGS

why
Edgewater
rolled steel rings
are best . . .
A solid steel block is heated to forging temperature, and thoroughly soaked.
The block is upset on a forging press, and the center is punched out.
On the rolling mill, the heated punched block revolves between main and pressure rolls, where its diameter grows and section shape is formed. Edging rolls control width.
Below—representative sections of rings rolled by Edgewater.

From a solid block of steel, a solid ring has been formed, to required size and shape. The accuracy possible with this process greatly minimizes the need for further finishing. Diameters are from 5 to 145 inches, weights up to 14,000 pounds. Materials include carbon and alloy steels, stainless, tool steels, titanium. Facilities available for machining and heat treatment.

Write for descriptive bulletin.

Edgewater Steel Company

Dept. IA • P.O. Box 478 • Pittsburgh 30, Pa.

DESIGN DIGEST

Stainless Fittings

Light-wall stainless steel fittings and flanges in a new line fit nominal temperature, low pressure, non-critical process piping. They're stocked in ½ through 4-in. sizes, schedule 5S and 10S, in stainless grades best suited to corrosive applications in the area of 150 psi or less. In addition to providing low-cost fittings for non-critical jobs, the new line features long tangents. These permit easy alignment of fittings and pipe. They allow clear-

ance for fabrication of completely flanged elbows, returns, tees and crosses. Fittings can be butt welded in the normal manner. Also, with use of an alignment connector or sleeve, they can easily be fillet welded or brazed. Where flanged connections are desired, the pipe or fittings are simply expanded into the bore of the flange insert; welding isn't required. (Tube Turns Div., Chemetron Corp.)

For more data circle No. 47 on postcard, p. 117

Fiber Metallurgy

Fiber metallurgy is a new production process in which thin fibers of metal are interlocked like felt and bonded with heat to produce a strong, lightweight material. A variety of aircraft and rocket applications are envisioned. Or, the material can be made denser, but uniformly porous, and thus serve to filter liquids and gases. Fiber metal networks could also be used to strengthen other materials like plas-

PROBLEM: *Which fire-resistant fluid is best for your particular operation?*

SOLUTION: *Ask the only manufacturer who makes all three!*

HOUGHTO-SAFE 600 SERIES
(*Water-Glycol Fluids*)
Adequate for 85% of all hydraulic systems; provides maximum fire protection with good lubricity for systems running below 150°F. temperatures.

HOUGHTO-SAFE 1000 SERIES
(*Phosphate-Ester Fluids*)
Available in three viscosities for systems running as hot as 150°F. and where maximum lubricity is needed for heavy bearing loads.

HOUGHTO-SAFE 5040 SERIES
(*Water-Oil Emulsion Fluids*)
Lower cost, fire-resistant fluids that are stable, afford good lubricity and provide adequate fire protection where hazards are intermittent or remote.

Selecting the *right* hydraulic fluid depends upon operating pressures and temperatures, pump and equipment design, degree of fire hazard, and other important factors. But to make sure you get a completely unbiased recommendation —call in the only manufacturer who makes all types.

Houghto-Safe fire-resistant fluids have proved themselves in industry's toughest hydraulic applications—not only as life and property-savers, but as efficient protection against excessive pump and packings wear. Houghto-Safe is also used extensively by the U. S. Navy for such critical carrier applications as deck-edge elevators and catapults.

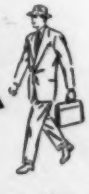
For a completely unbiased recommendation of the best and most economical fluid for your equipment and degree of fire hazard, call in your Houghton representative. Or write E. F. Houghton & Co., 303 W. Lehigh Ave., Phila. 33, Pa.

HOUGHTO-SAFE HYDRAULIC FLUIDS

... products of

E. F. HOUGHTON & CO.

PHILADELPHIA • CHICAGO • DETROIT • SAN FRANCISCO • TORONTO



Ready to give you on-the-job service

tics, ceramics, and soft metals. (Armour Research Foundation, Illinois Institute of Technology)

For more data circle No. 48 on postcard, p. 117

Dry Lubrication

A permanent, corrosion-resistant dry lubricant for coating water mixing valves and allied equipment has been announced. It has excellent chemical and thermal stability. It is suitable for fast moving mechanisms where wet lubricants are not desirable. The coating is approximately 0.0001 to 0.0002 in. thick and is permanently bonded to the metal surface. In valves, cheaper metals can be so coated and substituted for more expensive metals. (Fairchild Camera and Instrument Corp.)

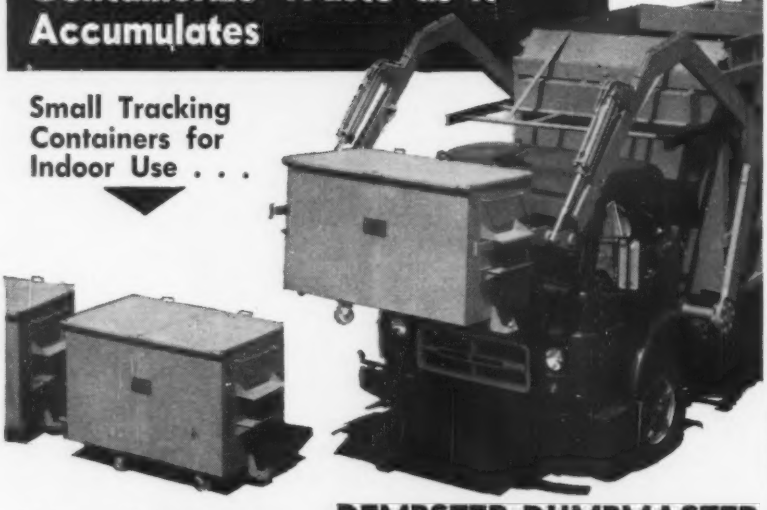
For more data circle No. 49 on postcard, p. 117

cut disposal costs by two-thirds . . .

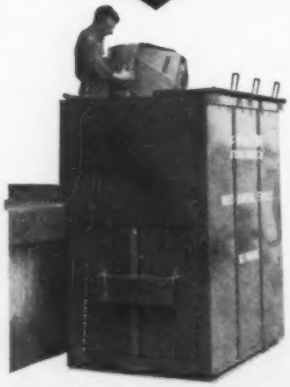
Containerize Waste as it Accumulates

Patents Pending

Small Tracking Containers for Indoor Use . . .



Large Containers for Outside Use



DEMPSTER-DUMPMASTER Handles SIX Sizes of Detachable Containers

Small one, two and three cubic yard tracking containers, which are towed, in train, to indoor waste accumulation points . . . large four, five and six cubic yard containers for outside waste storage . . . all are handled by the versatile new DEMPSTER-DUMPMASTER, the self-loading packer system that slashes your waste removal costs by more than two-thirds.

You can own this low-investment system, or contract with a Dumpmaster-equipped Private Hauler to place containers in your plant and empty them for a reasonable fee—his name on request.

Write For FREE BROCHURE

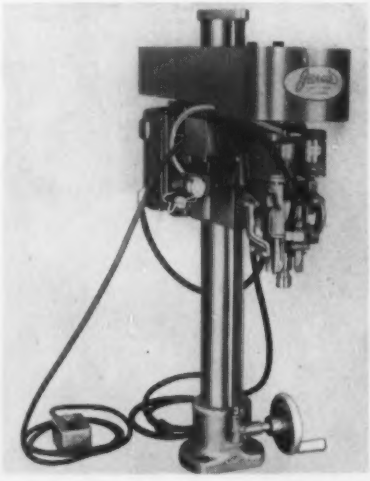
Mfd. By DEMPSTER BROTHERS Inc.

Dept. 1A-5 DEMPSTER BROTHERS, Knoxville 17, Tenn.

DEMPSTER DUMPSTER® SYSTEMS

Lead Screw Tappers

Automatic and adjustable, this pitch lead screw tapper adapts to any drill press table. It comes in five standard models. Its four-speed pulleys give speeds of 575, 958, 1437 and 2415 rpm. Tapping cycle is completely automatic, through air and electrical controls. This can be

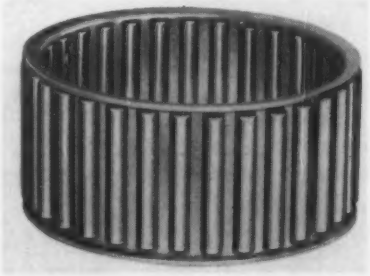


interconnected with controls of an indexing table if desired. Tap depth is electrically controlled and can be set to any depth within the stroke of the lead screw unit. The latter features rapid conversion from one pitch to another. (Jarvis Corp.)

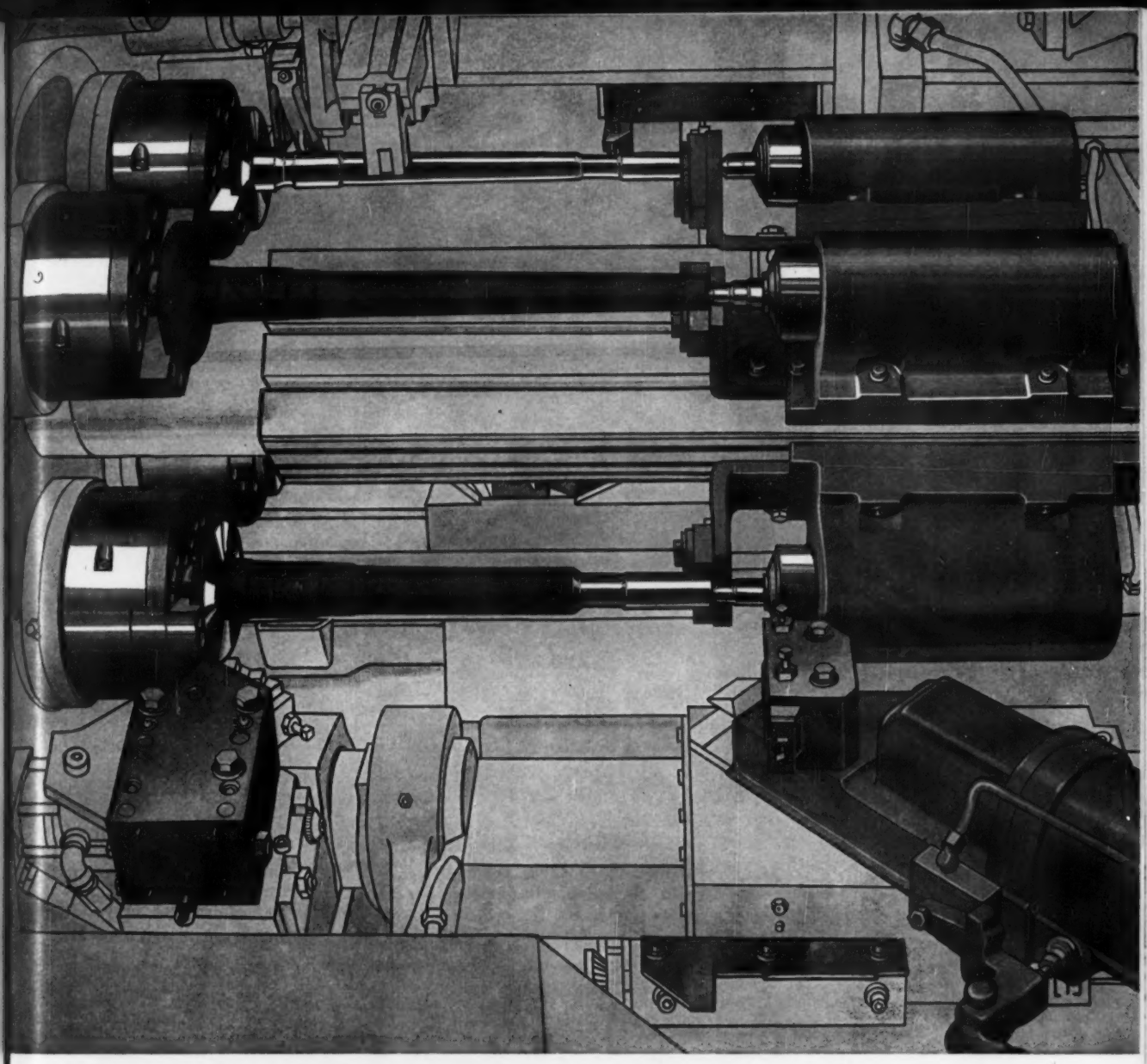
For more data circle No. 50 on postcard, p. 117

Needle Cage

Cage and roller assemblies now are available in 18 sizes from ½ to 2-in. shaft diameter. There's a choice of two lengths for each shaft diameter. These needle roller-cage



assemblies meet space restrictions in uses such as idler gears, planetary gears, seaming rolls or any locations where shaft and housing surfaces can be hardened and ground. They also save the cost of



idea *for volume producers of shafts*

Economists are making startling predictions on this year's increase in productivity. They say it will be twice that of recent years – up as high as 10% in some manufacturing industries.

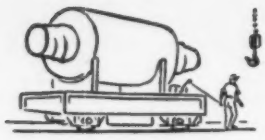
Whether or not these predictions come to pass, it's certain that it won't happen in plants using outdated equipment.

Shaft work is a problem to many firms. New Britain pioneered template-controlled contour turning and boring, solving the problem for many progressive companies. Now for the manufacturer with really high volume requirements we present Model 412/25–a four-spindle, template-controlled machine capable of producing a four-fold increase in productivity per man hour.

The basic principle pretty much speaks for itself. As in the case of the single-spindle contour lathe, inexpensive metal templates control the full cycle and re-cycle if required. Simple, single-point tools replace complex gang tooling. Set-up is simple and fast. When tools wear, merely replace them. Since all relationships are maintained by the template,, tool replacement involves no problem.

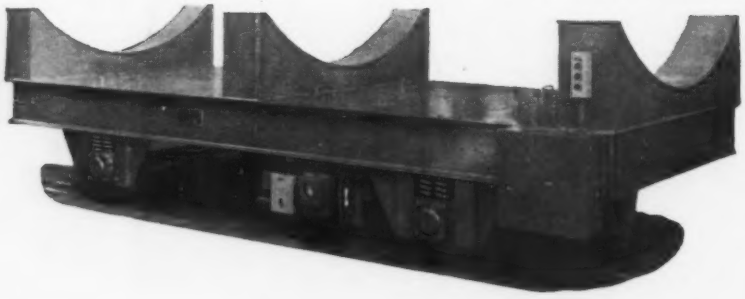
When the volume of contour turning warrants it, this machine can be the best money maker on the production floor. Your New Britain representative can quickly tell you after looking at your prints and learning of your production requirements. Meanwhile, we would be glad to mail you descriptive literature containing the basic facts and specifications. New Britain-Gridley Machine Division, The New Britain Machine Company, New Britain, Connecticut.

Links up your HANDLING NETWORK



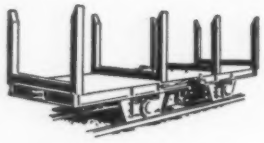
for added efficiency . . .

extra economy

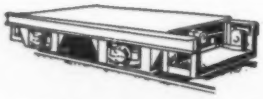


ATLAS WALK-ALONG

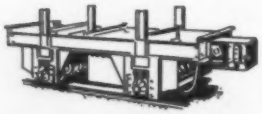
SAFETY-TYPE TRANSFERS



Special bed designs to cradle your load.



Single platform or double platform-operator rides.



Versatile power . . . diesel or gas electric, storage battery, or cable reel. Also remote control with no trailing cable.

If you're responsible for maintaining safe, low cost movement of heavy loads (5 to 200 tons) and intermediate transfer of these loads during process or storage, Atlas can help you by engineering a transfer car to meet your exact load and power requirements.

Atlas engineering gives you every modern safety feature for personnel protection.

. . . choice of power and control including:

1. Single lever (walk-along) forward, reverse with safety stop when lever is released.
2. Storage battery power with built-in charger.

For Cost-Saving Details Request "Walk Along" Bulletin 1286

THE ATLAS CAR & MFG. CO.

1140 IVANHOE ROAD • CLEVELAND 10, OHIO

ENGINEERS & MANUFACTURERS SINCE 1896

DESIGN DIGEST

separate races, and reduce space. The assemblies have ⅛-in. diam precision ground rollers. These are permanently aligned in pockets or bronze cages centered on the housing surface. They provide precision operation and high load in small space. (Orange Roller Bearing Co., Inc.)

For more data circle No. 51 on postcard, p. 117

Drill-Press Turret Head

A new five-position turret head makes possible five operations on one drill press—drill, ream, countersink, counterbore, tap. It is available in sizes to fit almost any drill press. (Connor Associates, Inc.)

For more data circle No. 52 on postcard, p. 117

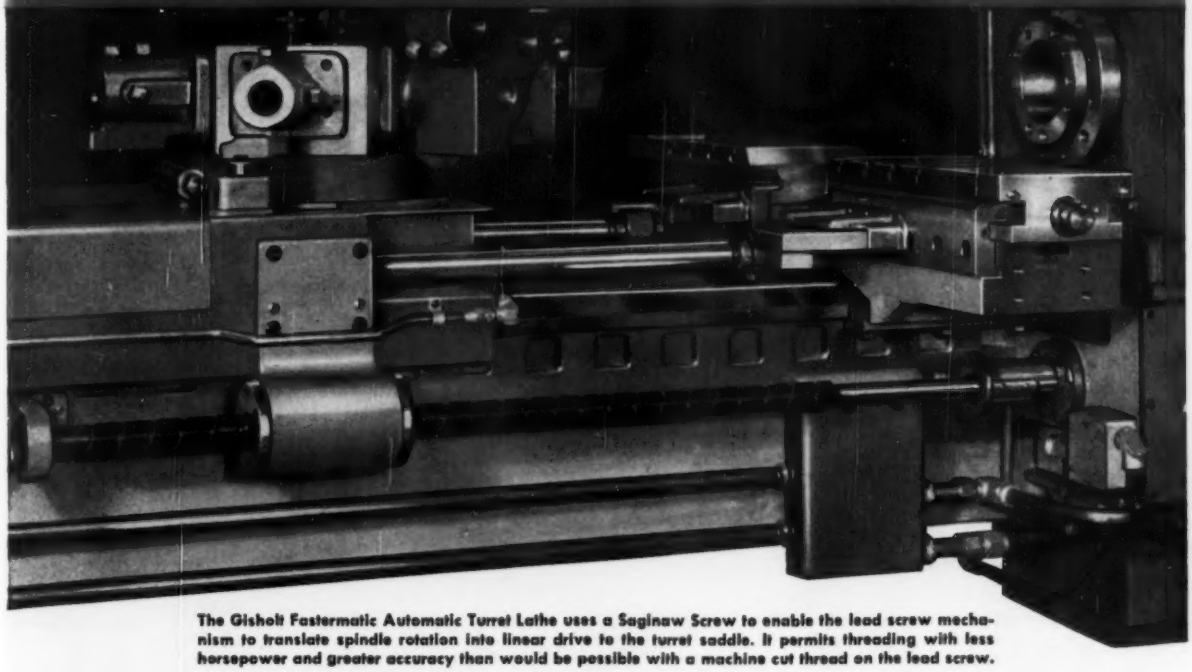
Insert Holders

Tool holders for the new precision screw-on type inserts are now available in four right- and left-hand sizes for square, round, and triangular inserts. Inserts can be indexed to within plus or minus 0.001 in.

Typical uses are in small boring bars and automatic tooling for small parts on which the design or size of standard clamped type tools limits their use. (Kennametal, Inc.)

For more data circle No. 53 on postcard, p. 117

GISHOLT CO. CUTS PRODUCTION COSTS WITH THE Saginaw b/b Screw

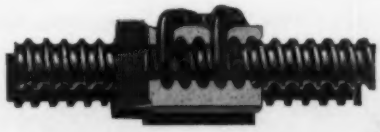


The Gisholt Fastermatic Automatic Turret Lathe uses a Saginaw Screw to enable the lead screw mechanism to translate spindle rotation into linear drive to the turret saddle. It permits threading with less horsepower and greater accuracy than would be possible with a machine cut thread on the lead screw.

"BECAUSE CRITICAL PRECISION IS BUILT INTO EVERY SAGINAW SCREW, it's saved us money by cutting out an extra production cost on the threading attachment of our Fastermatic Automatic Turret Lathe. Without the Saginaw Ball Bearing Screw we would have to pay a considerable premium for acme screws machined to less than standard limits. Now the Saginaw Screw gives our product greater accuracy and longer life with less friction . . . and much greater Sales Appeal as well," *says Mr. A. A. Ebel, Advertising Manager, Gisholt Machine Company, Madison, Wisconsin.*

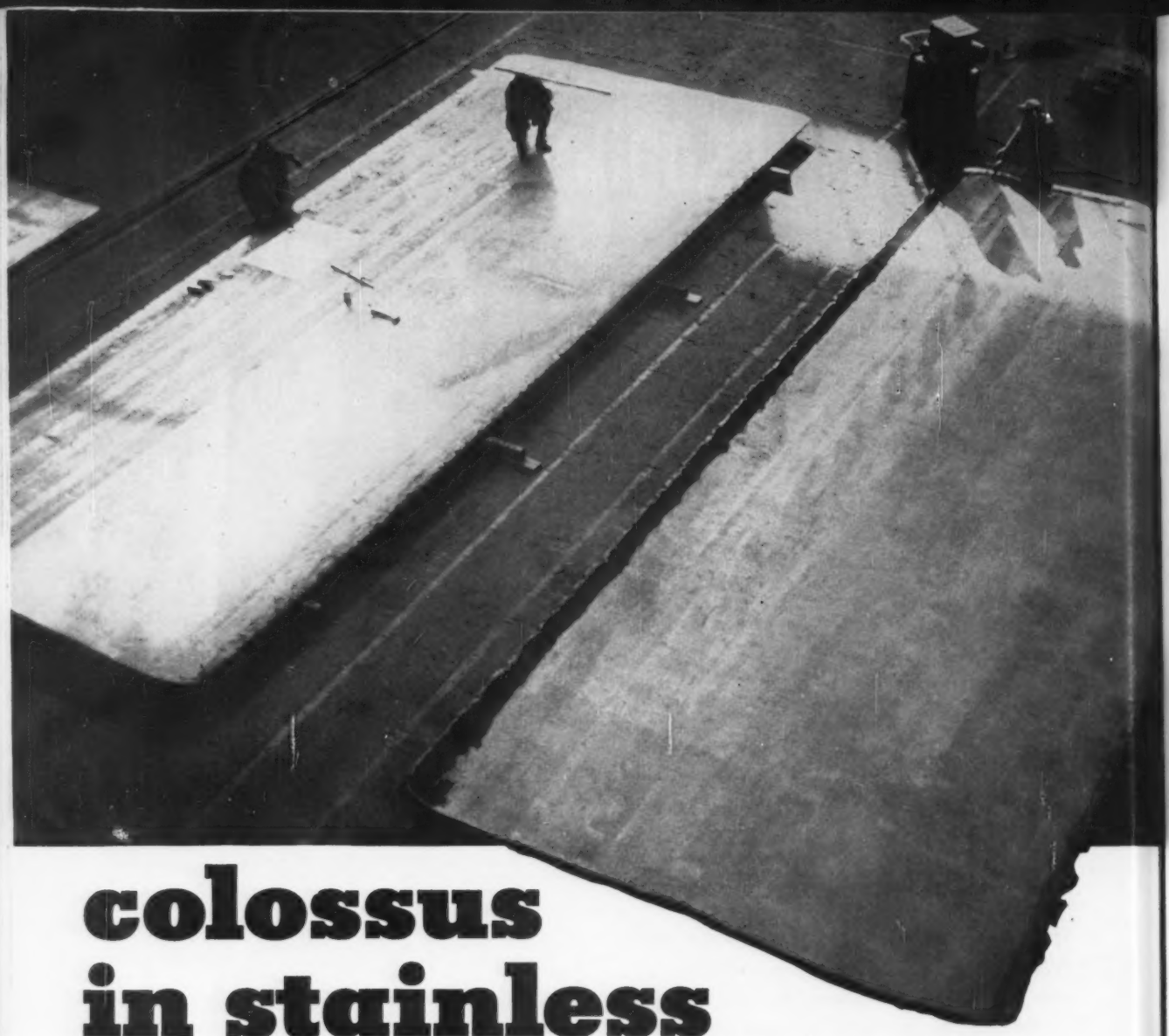
The Saginaw Ball Bearing Screw converts *rotary* motion into *linear* motion with over 90% efficiency. So save time, power, weight, space and cost by switching to these versatile Saginaw Screws.

Perhaps the Saginaw Screw can give *your* products that greater Sales Appeal you're looking for. For the detailed story, write or telephone Saginaw Steering Gear Division, General Motors Corporation, Saginaw, Michigan—*world's largest producers of b/b screws and splines.*



Give your products NEW SALES APPEAL... switch to the Saginaw ball bearing Screw

WORLD'S MOST EFFICIENT ACTUATION DEVICE



colossus in stainless

...world's largest stainless steel plates ready for processing at Carlson

SOMETIMES Carlson service is a cooperative venture that gets practically impossible jobs done. The processing and finishing of these, the world's largest stainless steel plates, is an example of such teamwork.

As this was a "first time" job, the most careful planning and coordination had to be exercised. Oversize ingot molds and a 70-ton capacity furnace had to be used. It took the country's largest plate mill to roll the ingots to slabs, the slabs to plates. The finished plates, cut-to-shape by Carlson specialists, met every customer requirement.

These huge plates, of Type 304 stainless steel, were made to Specification A-240 Grade S (ASTM A240-T). Each plate weighed over 49,000 pounds; one measured 461" x 179" x 2"; the other 451" x 184" x 2". Destined for a nuclear application, these plates were flame-cut and abrasive-cut to make two half-circles. The entire order totaled nearly 100,000 pounds.

Cooperation made this "colossus" a success—cooperation under the knowing eyes of Carlson specialists. This same team is ready to work on your order. We invite you to write, wire or phone for further information.

G.O.CARLSON Inc.

Stainless Steels Exclusively

120 Marshalton Road
THORNDALE, PENNSYLVANIA
District Sales Offices in Principal Cities

PLATES • PLATE PRODUCTS • HEADS • RINGS • CIRCLES • FLANGES • FORGINGS • BARS and SHEETS (No. 1 Finish)

New Equipment and Machinery

Gun-Borer Does Finished Holes in One Pass

A new gun-drilling and gun-boring machine with the features and accuracy of a jig-bore can be put to a wide variety of uses. Precision holes—long or short—can be cut to close tolerances in one pass. Also, the operator can position, space, and hold the workpiece for new drilling locations without removing it, thereby maintaining precise hole alignment and relationship. Subsequent operations like counterdrilling, boring, and chamfering can be performed in the one hole location. New hole locations can be located, and tolerance held, by moving the traversing table with easily read hand dials. The table has a wide range of travel, and power units with 12- to 36-in. feeds are available. The machine thus saves in time and eliminates the need for numerous clamping devices. (Drillmation Co.)

For more data circle No. 54 on postcard, p. 117

Low-cost Unit Extends Broaching's Feasibility

Moderate in price, a new broaching machine may permit use of broaching for certain operations formerly machined some other way. The small pull down broaching unit is midget size rated 1½-ton at 5-fpm broaching speed, ¾-ton at 10-fpm. Built with a 12-in. stroke, standard equipment comprises two cutting speeds and a mechanism for adjusting the stroke. Tooling, coolant system and electrical equipment are extra. The bench size, pull-down broaching machine is only 31 in. wide, 20 in. front to back and 34 in. high. Hole in the drawhead is 1½ in.; hole in the platen is 5 in. The platen dimension (working surface) is 17 x 18½ in. Weighing 500 lbs, it's self contained, readily portable, and can be plugged into any 110-v outlet. Such parts as lock cylinder barrels, various slots, and other internal applications are broached easily on this machine. (The Lapointe Machine Tool Co.)

For more data, circle No. 55 on postcard, p. 117

Balancer Trues High-Speed Rotating Parts

Eliminating vibration from minature high-speed rotating parts or assemblies has been simplified with the introduction of a line of high-speed balancing machines. Unbalances causing work support movements greater than 0.00002 in. with work rotating at any speed between 1000 and 3000 or 4000 and 12,000 rpm, can be quickly and accurately measured and located. Horizontal or vertical type machines are available. The horizontal type machine will measure the exact location and amount of the correction required in each of two transverse planes in the work in a single run. The part will be balanced when the correction is applied at the indicated location in each plane. The indications of the amount of unbalance are easily converted into units of drill depth or any other selected correction unit. Special correction equipment is sold separately. (Gisholt Machine Co.)

For more data, circle No. 56 on postcard, p. 117

US ROYAL V-BELTS

THE NEW, ALL-NEW U. S. ROYAL V-BELT

NEW *all new* because its cords are treated by an entirely new automation process. Every cord is impregnated with latex in every fiber (not merely surface-coated). Every cord is then built into the belt under tension, with errorproof electronic precision to insure that each will pull its uniform share of the load.

NEW *all new* because the belt is cured by a unique method of molding developed by U. S. Rubber. Consequently there can be no inner or outer imperfections, no harsh bumps. This means smooth-running performance, long belt life.

NEW *all new* because the new covers of new fabrics become a homogeneous blend through new molding techniques. This results in longer belt life by increasing wear resistance.

NEW *all new* because this new method of construction results in strength to spare...a reserve of strength which combined with vibration-free running, results in greater drive efficiency.

NEW *all new* because U. S. Royal V-Belts feature perfect matchability. Born matched, they stay matched.

U.S. Royal V-Belts are in stock at all "U.S." Transmission Distributors. • • •

When you think of rubber, think of your "U.S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality industrial rubber products.

Mechanical Goods Division

United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y. In Canada: Dominion Rubber Company, Ltd.

All these advantages built into the new U. S. ROYAL V-BELT increase H. P.

40%

NO PREMIUM PRICE

The new cords and new fabrics and new construction methods all add up to increasing the H.P. rating of U. S. Royal V-Belts by 40%. These superior improvements mean higher drive capacity at less cost. Using fewer belts and narrower sheaves means less belt cost and less sheave cost. Yet, with all this, you pay no premium for the new U. S. Royal V-Belt!

Punch Press

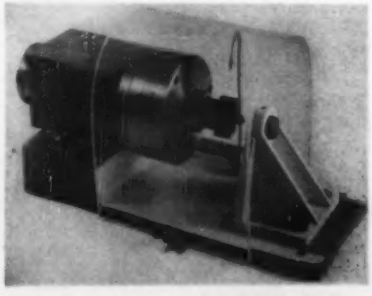
A new low-priced air-hydraulic punch press makes possible fast, economical hole punching in angles, channels, extrusions, and sheets. The unit also performs notching and mutiple-hole punching operations. Punches and dies for various hole diameters are rapidly interchangeable. This press can also

punch extruded and countersunk holes, small louvers, and lanced holes. Threaded nut inserts may be pressed into sheets or parts. Die sets can be installed for stampings. Scales are built in to insure accurate location of holes and notches in the work. (Punch Products Corp.)

For more data circle No. 57 on postcard, p. 117

Wire and Rod Cleaner

This small machine cleans rust, corrosion, and light scale from rod and wire ranging in size from 1/32



to ⅜ in. diam. With a weight of only 38 lb and dimensions of 6½x12x7 in., it is easily mounted on existing equipment. Setup time

Plastic Steel® saved over $1000... plus days of downtime for MARRINER

A broken centrifuge at Marriner Combing Company stopped production on an important order. PLASTIC STEEL was used for on-the-spot repairs and the machine was back in operation within an hour at a cost of less than $5.00. Using conventional repair methods would involve several days and cost over $1000.

Hundreds of companies have saved time and money by repairing worn machine parts, cracked castings, leaking hydraulic systems and tanks, rebuilding worn pumps or valves, etc., with PLASTIC STEEL®.

PLASTIC STEEL® and other Devcon products are used for making jigs, fixtures, metal-forming dies, plastic and rubber molds, foundry patterns and core boxes, and other industrial tools.

PLASTIC STEEL® — as easy to use as modeling clay — hardens to steel-like strength in 2 hours . . . can be machined with regular tools. Bonds all metals, wood, glass, concrete, etc. to itself or each other. Extremely high tensile, compression, impact strength — excellent chemical resistance.

Find out how PLASTIC STEEL® and other Devcon products can save time, cut maintenance costs and speed production in your plant — write for FREE bulletin today.

Distributed nationally by leading industrial suppliers

DEVCON CORPORATION

50 ENDICOTT STREET, DANVERS, MASS.

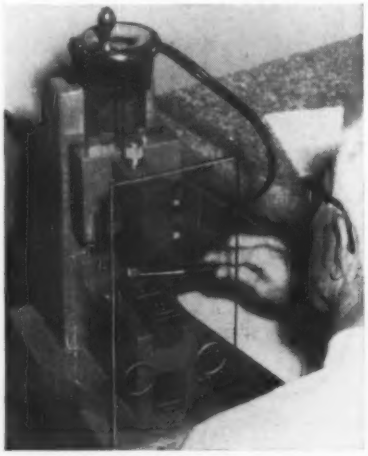
NEW EQUIPMENT

is low, and wire-brush pressure on the material being cleaned is easily adjusted. (Beard Machine Co.)

For more data circle No. 58 on postcard, p. 117

Gage Comparator

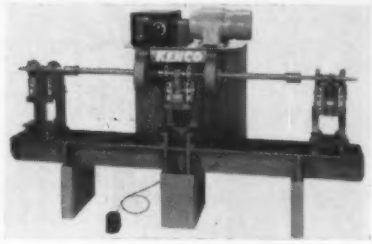
This electronic comparator can detect dimensional variations of 0.000001 in. It can measure gage blocks as large as 4 in. Four magnifications are provided: 2000:1, 6000:1, 20,000:1, and 60,000:1, with respective graduations of 0.000030, 0.000010, 0.000003, and 0.000001 in. Two sets of three balls on the precision-ground reference platen provide accurate three-point reference surfaces for comparing gage blocks. Handling and positioning of parts are thus facilitated. The gaging spindle operates with very light gaging pressure. Coarse adjustment of the gaging head is by an elevating screw; fine adjustment is electrical. (Federal Products Corp.)



For more data circle No. 59 on postcard, p. 117

Progressive Punch

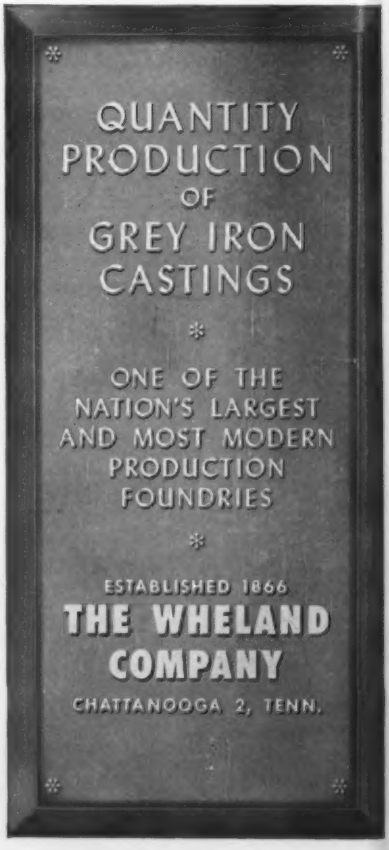
Designed for exceptionally long progressive die work, and for punching, forming, and braking where extremely long die sets are used, a new press setup consists of three 5-ton punch presses mounted on a rugged frame. A crankshaft operates the three rams synchronously. Single trip, continuous, or inching operation can be selected. In many cases, as many as five operations may be grouped into a single operation. Absolute safety features to prevent double tripping are incorporated. (Kenco Mfg. Co.)



For more data circle No. 60 on postcard, p. 117

Wet-Blast De-Burrer

An automatic wet-blast machine removes light flash and burrs from die-cast nameplates and other similar parts. The machine, featuring stainless-steel construction, has no pumps or moving parts in its blast circuit. It also incorporates a complete process cycle including automatic unload and oxidation inhibition in its final stage. (Hydra-Blast



longer fatigue life

greater corrosion resistance

less product incrustation

now tests prove...CONTOUR-WELDED* STAINLESS TUBING PROVIDES THESE IMPROVEMENTS *because* IT'S SMOOTHER INSIDE!

Recent tests of both seamless and welded full-finished tubing prove TRENTWELD® tubing—made by the exclusive *Contour-Weld* process—is smoother than tubing made by any other method.

It's smoother internally than seamless because it's formed from uniformly rolled strip steel whereas seamless is extruded from a billet.

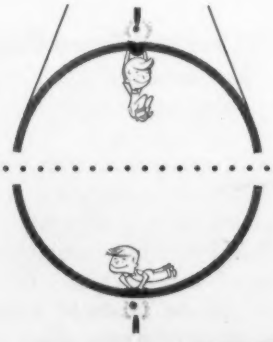
It's smoother than other welded tubing because *Contour-Welding*, Trent's patented process, virtually eliminates the weld bead on the inside surface.

Tests prove this smoother surface accounts for TRENTWELD's *longer fatigue life*—essential in hydraulic and pressure applications—*greater corrosion resistance*—vital in handling chemicals—and *less product incrustation*—which must be eliminated to prevent product contamination.

TRENTWELD Contour-Welded Tubing is promptly available in stainless and high alloy steels, titanium, zirconium, zircaloy and Hastelloy†, in sizes from ⅛" to 40" O.D.

For full details, send for the free 48-page "Trent Tubing Manual." Write: Trent Tube Company, Box 2518, Pittsburgh, Pa.

†Trademark Haynes Stellite Co.



In CONVENTIONAL WELDING of tubes, gravity pulls molten metal down inside the tubing to form a bead that is difficult to remove by cold working. And cold working may lead to undercuts, focal points for fatigue cracks and corrosive attacks. Cleaning becomes difficult.

* **With CONTOUR-WELDING** the tube is welded at the bottom. Gravity still pulls the molten metal down, but now the weld area corresponds to the contour of the tube. There's virtually no weld bulge on the inside surface. And even on the O.D., the weld seam more closely conforms to the contour of the tubing.

CONTOUR TRENTWELD

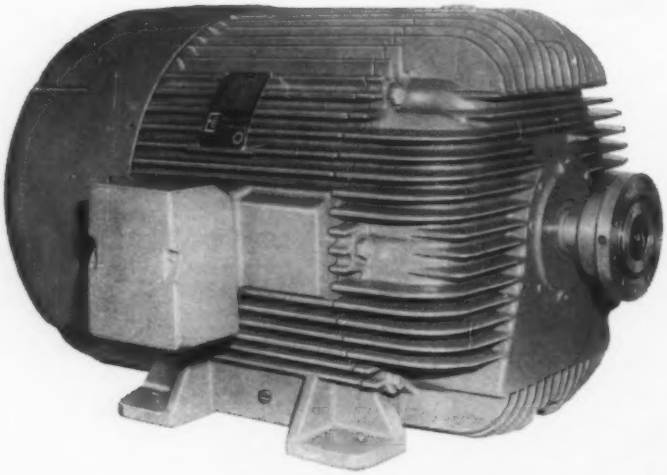
stainless and high alloy pipe and tubing

TRENT TUBE COMPANY Subsidiary of

Crucible Steel Company of America • GENERAL OFFICES: East Troy, Wisconsin • MILLS: East Troy, Wisc.; Fullerton, Calif.

ELLIOTT C-W SEALEDPOWER MOTORS

This new 300-hp unit is the largest of the Elliott C-W "family" of ribbed-frame enclosed motors, pioneered in the United States by Crocker-Wheeler.



BEST FOR YOUR TOUGHEST JOBS BECAUSE THEY ARE BETTER COOLED BETTER PROTECTED BETTER BUILT

IMPORTANT FACTS are given in new Elliott Bulletin PB 6000-2. Send for free copy now.

ELLIOTT Company

Crocker-Wheeler Plant • Jeannette, Pa.

WB-5

NEW EQUIPMENT

Mfg. Div., Automation Services, Inc.)

For more data circle No. 61 on postcard, p. 117

Band Saw and Filer

This metal-cutting band saw and filer can be used in producing tools, dies, and patterns, and can also sand wood and grind metals, including hard alloys and carbon steels. It incorporates a blade butt welder. (Boice-Crane Co.)

For more data circle No. 62 on postcard, p. 117

Spectrograph

Capable of photographing spectra of light lasting only microseconds, a new plane grating spectrograph offers high optical speed and good dispersion, resolution, and spectral coverage in the ultraviolet and visible regions. It may be used with high-speed drum cameras to further extend its response to short-duration events. (Jarrell-Ash Co.)

For more data circle No. 63 on postcard, p. 117

Automated Tube Bender

Press a button, and this machine feeds tubes into position, bends them, and removes the bent tubing without attendance other than to keep the inlet conveyor or hopper supplying tubes. Two tubes can be processed during each operating cycle of the machine. Flat-back "U's" can be produced 1800 per hour, or conventional return bends 980 per hour. Speed control of the hydraulic bending cycle is provided, and an alarm gives warning of short material supply. (Wallace Supplies Mfg. Co.)

For more data circle No. 64 on postcard, p. 117

Who Buys Roebling Upholstery Spring Wire After You Do?

The end-user can hardly be expected to know a great deal about Roebling helical spring wire, border and brace wire, zigzag and no-sag wire, wire for automatic machines, lacing wire...

Thus, the qualities of uniformity, temper, tensile strength, size and finish that are yours whenever you use Roebling Spring Wire mean long life, resiliency under constant use (and abuse) where it counts the most...to those who buy Roebling Upholstery Spring Wire after you do.

For further information on the wide range of types, the consistent superiority and availability of these and other Roebling wire products, write Wire and Cold Rolled Steel Products Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

Roebling...Your Product is Better for it

ROEBLING

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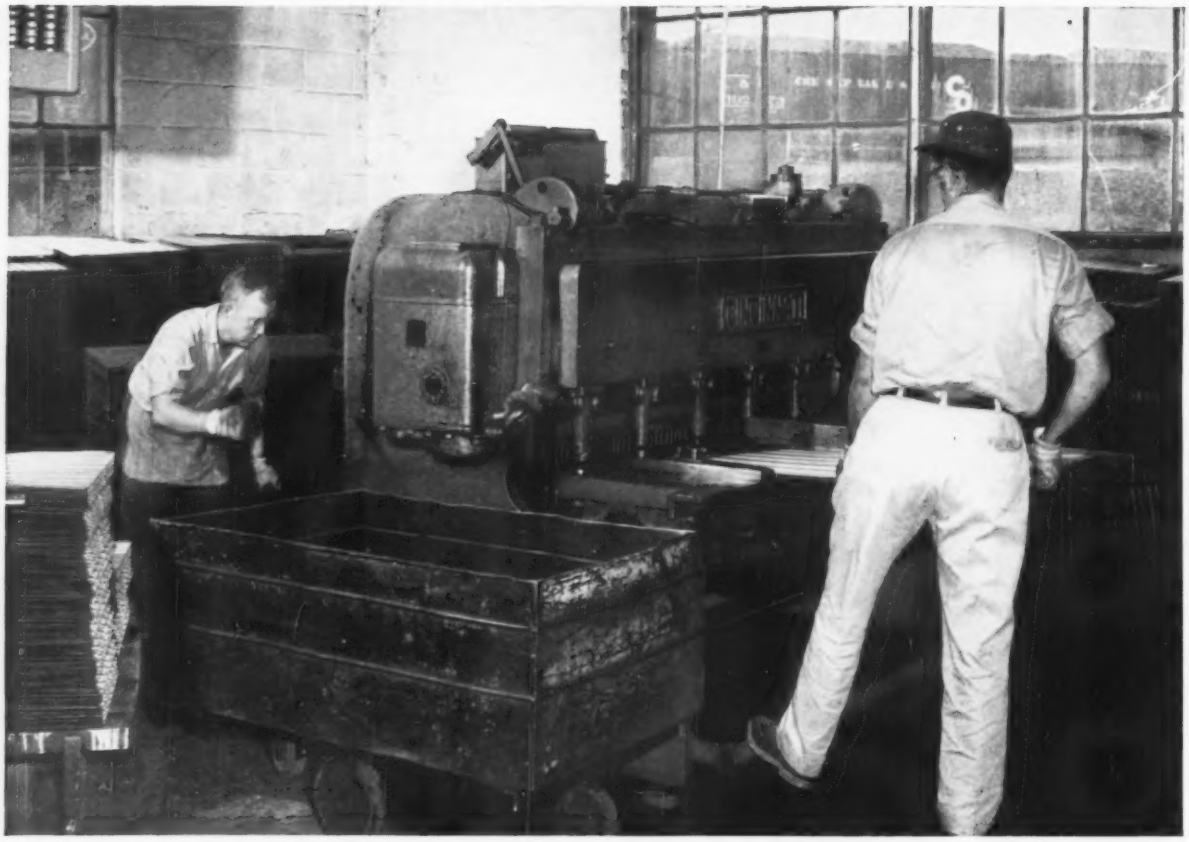

PRODUCTION: 10,000,000 cuts
MAINTENANCE COST: $896.00

This Cincinnati® Shear has been in constant service for ten years, cutting 18-gauge corrugated sheet, 1010 draw quality, for a prominent heating equipment manufacturer at an average rate of 4000 cuts a day. That adds up to more than a million strokes per year — or 10,000,000 strokes in ten years.

Accuracy has always been excellent. The machine has been "down" *only for blade changes.* Special blades are used in this operation, to eliminate distortion of the corrugations.

Cost of machine maintenance, including blade resharpening, has been $896.00 for the entire ten years. "This," says their production manager, "to my way of thinking, is very good performance." We agree. Yet this is not exceptional. Every Cincinnati® Shear is built to provide this kind of dependability and low maintenance, and we have hundreds of case histories to prove the point.

Specify Cincinnati® for all your shear requirements. Write Department B for Catalog S-7R.

Shapers / Shears / Press Brakes

THE CINCINNATI SHAPER CO.

Cincinnati 11, Ohio, U.S.A.

ELECTRIC FURNACE STEEL CASTINGS

are engineered to *YOUR* specific requirements

"C" steel castings are CLEAN steel castings of uniform structure that will minimize machining and assembly costs, permit of greater freedom and efficiency of design and add to your product the recognized strength, endurance and desirability of steel. C steel castings, foundry engineered from pattern to finished casting can be had in

CARBON, ALLOY OR STAINLESS STEEL SAND OR SHELL MOULDED

The technical experience and knowledge of our engineering staff are at your service. Write, phone, or call.

CRUCIBLE STEEL CASTING CO.
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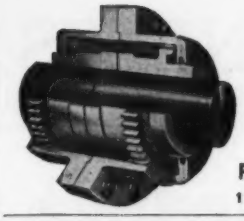
PUZZLED . . .

about personnel problems

Dissatisfied with present recruiting methods? The IRON AGE Employment Exchange is the meeting place for employers and men qualified in all phases of metalworking. For advertising rates, write to Chestnut and 56th Sts., Philadelphia 39.



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MULTIPLE SPINDLE
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Four, Five, Six, Eight Spindles • Work and Tool Rotating Type
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INDUSTRIAL AND ORNAMENTAL
PERFORATED METALS
DESIGNED AND PRODUCED FOR EVERY PURPOSE

Steel, brass, copper, monel, bronze, aluminum, zinc, tinplate, lead, stainless steel, coated metals, bonded materials, plastics and paper punched as required and for all kinds of screens.

We can guarantee sheets that are perfectly flat, straight parallel on sides, and free from buckle or camber.

A tremendous variety of screens. Our modern tool and machine shop is constantly building new dies placing us in a position to construct special dies as conditions may demand.

Metallurgical and design assistance.

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Large enough for big jobs, small enough for personal attention.

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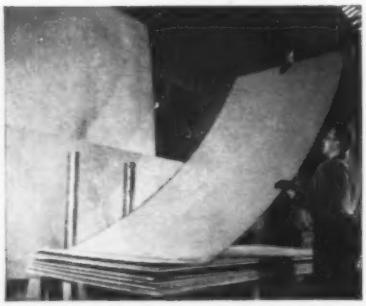
STAINLESS DIRECTORY

Buyers Guide to Ryerson Stainless Stocks & Services

Here's a quick guide to the nation's largest stocks of stainless steel—2,351 sizes, shapes, types and finishes of stainless in stock at Ryerson.

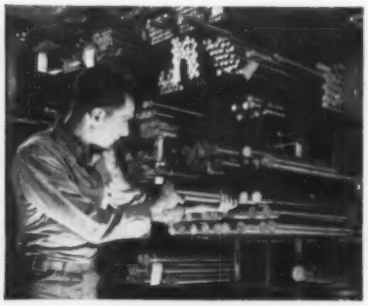
This wide selection assures you of getting the best stainless for every application. Extra care in storage, handling and shipping—such as padded shear clamps to protect finish and flatness of sheets, guards the high quality of Ryerson stainless stocks. And in addition, the help of full-time stainless specialists is yours when you call Ryerson.

See your Ryerson catalog for a complete listing of stocks and call your nearby Ryerson plant for quick shipment of stainless—any type or size—one piece or a truckload.

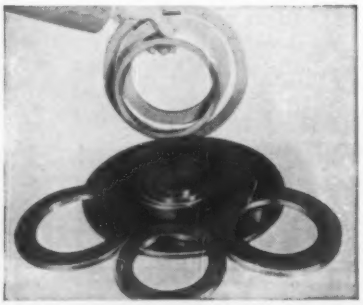


PLATES—Available in 9 analyses including plates to Atomic Energy Commission requirements and to ASTM specifications for code work. Also low carbon types for easy welding.

SHEETS—11 analyses of Allegheny stainless sheets in stock including nickel and straight chrome types. Also extra wide sheets to reduce welding costs, expanded and perforated sheets.



BARS AND ANGLES—Rounds, squares, flat's, hex's and angles in 8 types including free-machining bars with both analysis and mechanical properties controlled.



RINGS AND DISCS—Machine cut to your order. This service assures size accuracy, smooth edges, flatness and unaffected corrosion resistance in a lower-cost, ready-to-use product.

HEADS—A.S.M.E. flanged and dished heads in types 304, 304L, 316 and 316L are on hand in large quantities, and in a wide range of gauges and sizes.

PIPE AND TUBING—Light wall, standard and extra heavy pipe, ornamental and regular stainless tubing. Also screwed type and welding fittings and Cooper stainless valves.

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Increased Value in Buying Metals
Ask about this Ryerson Plan for 1959

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The Iron Age Summary

Third Quarter Is Question Mark

It used to be thought that the third quarter would be a picnic for steel users.

But improved business of metalworking companies now raises doubts, even with labor peace.

■ The third quarter steel market outlook is fast becoming a big question mark.

It used to be the thinking that if steel labor contract negotiations are settled peaceably, the third quarter would be a picnic for steel users, that there would be plenty of everything to go around.

Tail Wagging Dog? — But now there are some doubts. And the reason is that metalworking companies are really using steel in great quantities. It's becoming more apparent that buying as a hedge against a possible strike is not the whole story. In fact, it could turn out to be the lesser factor in the market picture.

The mills are not certain as yet that this is the case. But more of their customers are acting as though they need steel on order for use rather than for inventory building. Steel users are pressing for delivery on specific lots rather than blanket orders of the type that might cover steel for inventory. Apparently these companies need the steel now —not later.

Reports Widespread—Reports of better business for steel users are becoming so widespread that one major mill is rechecking its inventory calculations. Inventory position will have a bearing on third quarter operations if there is no strike, and fourth quarter demand if there is a walkout.

Meanwhile, steel output is running at a record pace. It's estimated that first half production will be at an annual rate of between 125 and 130 million ingot tons. This compares with the 1955 record of 117 million tons. It's for this reason that more steel men are thinking in terms of near-record production this year, assuming that a strike would not continue for too long a time.

Carryovers Heavy — On some products, order carryovers will be heavy. This is true in the case of sheet and strip, galvanized sheets, plates, and probably bars.

There seems to be no end to demand for galvanized sheet. The volume of July and August orders has led producers to retain quotas on third quarter business. Makers of grain bins and culvert pipes are among those being pinched by the tight supply. Some go so far as to assert that the government's grain bin program is in jeopardy.

Seaway Imports—Now that the St. Lawrence Seaway is open, the problem of foreign competition is becoming more urgent. Steel imports are moving into the U. S. markets in larger ships. Major products so far are wire, rod, re-bars, angles, and plates, mostly from Germany and Belgium.

Steel Output, Operating Rates

Production	This Week	Last Week	Month Ago	Year Ago
(Net tons, 000 omitted)	2,675	2,632	2,646	1,334
Ingot Index				
(1947-1949=100)	166.6	163.8	164.8	83.0
Operating Rates				
Chicago	95.0	94.0*	95.0	55.0
Pittsburgh	97.5	96.5*	94.5	49.0
Philadelphia	95.0	96.5	97.0	55.0
Valley	87.5	87.0*	90.5	37.0
West	93.0	92.0*	93.0	70.0
Cleveland	99.0	95.0*	97.0	27.0
Detroit	98.0	99.0	97.0	34.0
Buffalo	105.0	105.0	105.0	34.5
South Ohio River	95.0	102.0*	90.0	28.0
South	91.5	94.0	91.5	65.0
Upper Ohio River	94.5	93.0	98.0	70.0
St. Louis	99.0	98.0*	77.0	82.0
Aggregate	94.5	93.0	93.5	49.4

*Revised

Prices At a Glance

(Cents per lb unless otherwise noted)	This Week	Week Ago	Month Ago	Year Ago
Composite price				
Finished Steel, base	6.196	6.196	6.196	5.967
Pig Iron (gross ton)	$66.41	$66.41	$66.41	$66.49
Scrap No. 1 hvy (Gross ton)	$33.83	$33.83	$36.50	$32.00
No. 2 bundles	$22.83	$22.83	$24.17	$23.17
Nonferrous				
Aluminum ingot	26.80	26.80	26.80	26.10
Copper, electrolytic	31.50	31.50	31.50	25.00
Lead, St. Louis	11.30	11.30	10.80	11.80
Magnesium	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin, Straits, N. Y.	102.625	102.75	103.00	94.00
Zinc, E. St. Louis	11.00	11.00	11.00	10.00

What Are Purchasing's Aims?

Joseph Smith, vice president, Purchases, Pittsburgh Steel Co., believes quality, service, and price are the key elements in sound purchasing.

But each requires skilled detailed attention.

▪ Profitable purchasing, according to Pittsburgh's Steel Joseph Smith, requires three basic elements—quality, service, and price. Mr. Smith, vice president, Purchases emphasized the profit concept in addressing a purchasing seminar at Rockwell Manufacturing Co., Pittsburgh.

Sales Aid — "Modern business management realizes that savings effected through efficient purchasing find their way into the profit picture just as increased profit from operating and sales efforts," he said.

On the question of quality, he called for precision and for open lines of communications. For a purchasing man, quality means "the best grade of material to fulfill, but not exceed, the requirements of the use to which it is to be put."

Open Lines — Under the same heading, Mr. Smith sees the need for a regular flow of information between purchasing and the operating departments. At the same time he reminds that "all negotiations between buyer and seller and the final purchase transaction are the responsibility of purchasing."

The notion of supplier service extends beyond just deliveries, he says. It takes in things like maintenance of equipment, alertness to new developments and a reputation for getting the word.

JOSEPH G. SMITH: Insist on quality, service, and price.

Don't Price Buy—On the question of prices, Mr. Smith emphasizes that purchasing man must "always guard against getting the reputation of being a price buyer."

"The intelligent purchasing man looks at price along with quality, suitability, service, delivery and with proper consideration for his company's commercial relations."

Timing Counts—Price is just one element in cost, says Mr. Smith. Transportation, handling, and labor costs must all be considered. Basically, his company aims at buying at a price that will permit a fair profit. It works to keep margins within reasonable bounds by making sure there is ample competitive pressure.

". . . That generally means two or three bidders on most jobs."

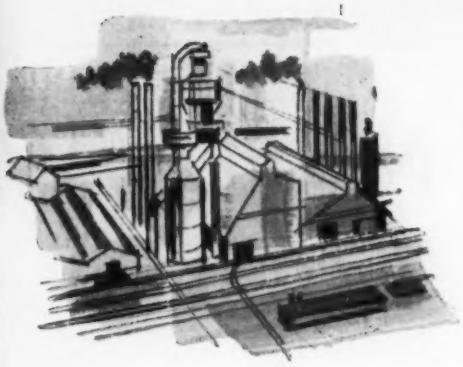
Another consideration in pricing: The buyer must stay on top of his market. The ability to time purchases advantageously is important costwise and it carries with it the ability to move in the proper direction as lead times change.

In addition, purchasing should promote friendly relations with suppliers. It must carry out company policies.

Cost and Profit—The arithmetic of purchasing efficiency is spelled out by Mr. Smith this way: ". . . in the average manufacturing concern about 55¢ of every sales dollar is spent for purchased goods and services exclusive of direct labor."

"While purchasing is not a substitute for a sale, it can perform a role in management which can be expressed in terms of sales dollars."

Expressing it that way, he says a dollar saved is equal to $10 worth of sales.



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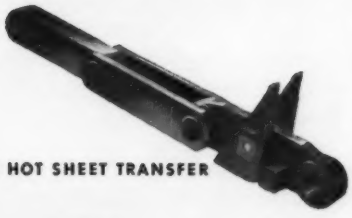

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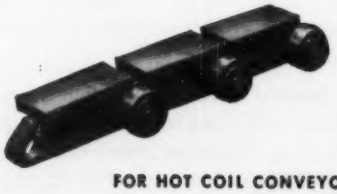

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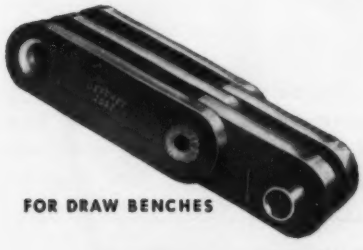

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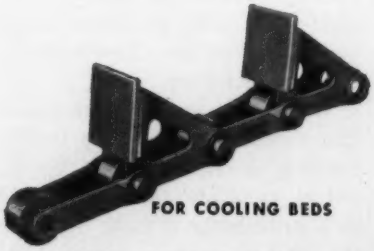

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CONVEYING • PROCESSING • MINING EQUIPMENT...TRANSMISSION MACHINERY...CONTRACT MANUFACTURING

Next Few Weeks Will Be Critical

During May steel mills will try to reduce shipping backlogs.

For users the month is their last good opportunity to build up inventories.

▪ May is a critical month for both steelmakers and steel users. For the mills it's the last chance to reduce order backlogs before a possible strike shutdown. Any tonnages unshipped at month's end must be carried over into June. And while that steel is made June orders will wait—perhaps until a steel strike is over.

May is equally important for the users. Many buyers see this as the key month in their inventory plans. They reason this way: If the mills can't ship all their orders this month, there's slim hope for June delivery.

With all this push to get steel delivery, May could bring another headache: The long expected freight jam-up. While strained, steel shipping facilities have held up pretty well so far. But the next four or five weeks will give them their toughest test.

Sheet and Strip—Third quarter orders are coming in slowly. However, some district sales indicate customers will book "respectable" tonnages.

At **Chicago,** mill deliveries on all sheet products are still falling behind. Carryovers are now three to six weeks on hot- and cold-rolled sheet and strip, and galvanized sheet. **Pittsburgh** and **East Coast** mills have all sheet products sold out through June.

Jones & Laughlin is enlarging its mill at **Cleveland** and sheet users will soon be able to get more drawing quality tonnage. In the expansion, oxygen furnaces rated at 1.2 million tons a year will replace eight existing openhearths.

Galvanized—Demand shows no sign of slowing. Third quarter ordering is heavy. Some mills have put customers on quota. Generally galvanized orders dip in the last quarter of the year. But they didn't in 1958 and they may not this year.

Active consumers right now are auto companies and makers of grain bins and culvert pipes. But the big order push is coming from a wide range of commercial and residential building applications. With demand moving ahead of mill capacity, at least six new galvanizing lines are under consideration.

Plates and Shapes—Little third quarter ordering has turned up yet for either plates or shapes. But mills are booked solid through the second quarter on plate. Demand for standard structurals is not quite as strong. **East Coast** mills had been relieving a shortage of structurals in the **Chicago** area. Now, however, this source of supply has started drying up. Local mills there have carryovers up to three weeks on structurals, up to six weeks on plates.

A **West Coast** mill sales manager reports: "We're all out of gas through June with the exception of a few structurals and bar sizes. It's hard to tell how much of it is hedge buying. But the overall picture is a lot better than we expected."

Tinplate—Mills expect their shipping peak to come this month. Until now they have generally kept shipments moving on schedule. Currently they are turning down second quarter orders. Tinplate producers at **Pittsburgh** say customer inventories are not as high as expected.

Wire Products — Manufacturers wire mills are operating at full capacity. As yet mill carryovers are small—only a week or so in most cases. But **Midwest** producers are concerned because some customers are already running low on wire stock. In addition some mills are having trouble getting enough rod and billet stock to meet their needs.

Imported Steel—More European steel is coming down the St. Lawrence Seaway into **Midwest** markets. So far the principal products involved are wire, rod, reinforcing bars, angles, and plates. Main suppliers: Germany and Belgium.

Steel users in the **Cleveland** area, where more imports are appearing, are threatening to buy foreign-made steel unless they get domestic deliveries.

Service Centers — Some warehouses are disturbed about their inventories. **Chicago** area outlets say plate supplies in a number of cases are only two thirds of normal. Other products in poor supply: Cold-rolled and galvanized sheet and hot-rolled bar. Structural demand is increasing.

West Coast service centers indicate customers are having trouble building inventories. One reports, "Many users say what they bought as a strike-hedge is going right into the job."

PURCHASING AGENT'S CHECKLIST

Shortage of iron ore possible in the second half. **P. 57**

How to evaluate vendors and cut inspection costs. **P.65**

Automakers will use more galvanized sheet in new cars. **P. 69**

COMPARISON OF PRICES

(Effective May 5, 1959)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland Youngstown.

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

	May 5 1959	Apr. 28 1959	Apr. 7 1959	May 6 1958
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	5.10¢	5.10¢	5.10¢	4.925¢
Cold-rolled sheets	6.275	6.275	6.275	6.05
Galvanized sheets (10 ga.)	6.875	6.875	6.875	6.60
Hot-rolled strip	5.10	5.10	5.10	4.925
Cold-rolled strip	7.425	7.425	7.425	7.17
Plate	5.30	5.30	5.30	5.12
Plates, wrought iron	13.55	13.55	13.55	13.15
Stainl's C-R strip (No. 302)	52.00	52.00	52.00	52.00
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	$10.65	$10.65	$10.65	$10.30
Tin plates, electro (0.50 lb.)	9.35	9.35	9.35	9.00
Special coated mfg. ternes	9.90	9.90	9.90	9.55
Bars and Shapes: (per pound)				
Merchant bar	5.675¢	6.675¢	5.675¢	5.425¢
Cold finished bar	7.65	7.65	7.65	7.30
Alloy bars	6.725	6.725	6.725	6.475
Structural shapes	5.50	5.50	5.50	5.275
Stainless bars (No. 302)	46.75	46.75	45.00	45.00
Wrought iron bars	14.90	14.90	14.90	14.45
Wire: (per pound)				
Bright wire	8.00¢	8.00¢	8.00¢	7.65¢
Rails: (per 100 lb.)				
Heavy rails	$5.75	$5.75	$5.75	$5.525
Light rails	6.725	6.725	6.725	6.50
Semifinished Steel: (per net ton)				
Rerolling billets	$80.00	$80.00	$80.00	$77.50
Slabs, rerolling	80.00	80.00	80.00	77.50
Forging billets	99.50	99.50	99.50	96.00
Alloys blooms, billets, slabs	119.00	119.00	119.00	114.00
Wire Rods and Skelp: (per pound)				
Wire rods	6.40¢	6.40¢	6.40¢	6.15¢
Skelp	5.05	5.05	5.05	4.875
Finished Steel Composite: (per pound)				
Base price	6.196¢	6.196¢	6.196¢	5.967¢

	May 5 1959	Apr. 28 1959	Apr. 7 1959	May 6 1958
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$70.57	$70.57	$70.57	$70.97
Foundry, Southern Cin'ti	73.87	73.87	73.87	73.87
Foundry, Birmingham	62.50	62.50	62.50	62.50
Foundry, Chicago	66.50	66.50	66.50	66.50
Basic, del'd Philadelphia	70.07	70.07	70.07	70.47
Basic, Valley furnace	66.00	66.00	66.00	66.00
Malleable, Chicago	66.50	66.50	66.50	66.50
Malleable, Valley	66.50	66.50	66.50	66.50
Ferromanganese, 74-76 pct Mn, cents per lb‡	12.25	12.25	12.25	12.25
Pig Iron Composite: (per gross ton)				
Pig iron	$66.41	$66.41	$66.41	$66.49
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$35.50	$35.50	$39.50	$32.50
No. 1 steel, Phila. area	33.50	33.50	34.50	34.00
No. 1 steel, Chicago	32.50	32.50	35.50	29.50
No. 1 bundles, Detroit	29.50	29.50	32.50	21.50
Low phos., Youngstown	38.50	38.50	41.50	34.00
No. 1 mach'y cast, Pittsburgh	49.50	49.50	49.50	48.50
No. 1 mach'y cast, Phila.	49.50	49.50	49.50	47.50
No. 1 mach'y cast, Chicago	52.50	52.50	54.50	42.50
Steel Scrap Composite: (per gross ton)				
No. 1 hvy. melting scrap	$33.83	$33.83	$36.50	$32.00
No. 2 bundles	22.83	22.83	24.17	23.17
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.50-15.50	$14.50-15.50	$14.50-15.50	$15.38
Foundry Coke, prompt	18.50	18.50	18.50	17.50-19
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	31.50	31.50	31.50	25.00
Copper, Lake, Conn.	31.50	31.50	31.50	25.00
Tin, Straits, N. Y.	102.625†	102.75*	103.00	94.00
Zinc, East St. Louis	11.00	11.00	11.00	10.00
Lead, St. Louis	11.30	11.30	10.80	11.80
Aluminum, virgin ingot	26.80	26.80	26.80	26.10
Nickel, electrolytic	74.00	74.00	74.00	74.00
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex.	29.50	29.50	29.50	29.50

† Tentative. ‡ Average. * Revised.

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo and Birmingham.

Steel Scrap Composites

Average of No. 1 heavy melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

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Prices Level Off In Weak Market

Little scrap is changing hands and prices are barely holding their own.

Mill interest is not likely to perk up, now that labor negotiations are underway.

▪ Scrap prices leveled off this week in most markets, due mainly to inactivity.

As the steel labor talks get underway, the scrap industry is pretty well resigned to further cutbacks in mill orders. Hardly a steel mill in the country is operating below 90 pct of capacity, but demand for open market scrap is approaching zero.

An example of the underlying weakness still existing in the scrap market comes from Cincinnati, the only market to show a significant price fluctuation this week. Primary openhearth scrap prices there dropped $2.50 on basis of new orders.

Even if prices do fall by similar amounts in other areas, it is highly doubtful that the mills will show much interest at this time. They are expected to coast through the critical labor negotiation period on their hot metal operations.

A moderate amount of export activity is helping stabilize prices in the port districts.

The IRON AGE No. 1 heavy melting Composite Price is unchanged at $33.83.

Pittsburgh — The market here continues weak and inactive. No. 1 factory bundles are off $1 as mills have been able to buy outside bundles at prices under those paid on the local list. Dealer grades are moving slowly at current prices. According to one estimate, the flow of scrap into yards has dropped 50 pct. However, there is too much pessimism and too little business for the reduced supply to produce pressure for higher prices. Prices of a mill on the fringe of the district were under the local market level for No. 1 heavy melting and over the local level for No. 2 heavy melting.

Chicago — The market resumed its downward drift after tightening momentarily last week. While there is a general tendency to restrict shipments by brokers and large yards, the fact that no mills show any desire to make strong purchases is again softening the market. Dealers have been shipping material at weaker broker buying prices. No. 1 railroad heavy melting is moving in increasing quantity at $37.

Philadelphia — Moderate export activity is keeping a little life in this market. Openhearth scrap prices have firmed because of it. On the domestic scene, there has been some repeat business in cupola cast at quoted prices. Otherwise, only a few distress cars are changing hands. Prices of turnings are nominal.

New York — No. 2 bundles slipped $1 to a top of $16 in a slow market. Other grades are unchanged. The best news here is cast iron orders for May from pipe foundries. The new orders were at going prices instead of the price drop which had been feared.

Detroit — While all local mills aren't expected to enter the market for dealer scrap this month, brokers believe prices will prove attractive enough to move material. Mill buying is expected next month as well, but in less volume.

Cleveland—Several Valley mills bought scrap last week, pumping a little life into the market. Industrial low phos sold for $39. Another mill bought No. 1 steel at $38 and a third took No. 2 bundles at $24, up $1.50 from previous quotes.

St. Louis—Movement of scrap is slow. General feeling is that prices will hold around current levels with no upturn in sight. Cast iron brake shoes rose $1. Stove plate is up $1.50. Turnings slipped 50¢.

Birmingham — Dealers say they can no longer fill even the limited orders they are receiving from current intake of scrap. They are unwilling to go into higher priced inventory.

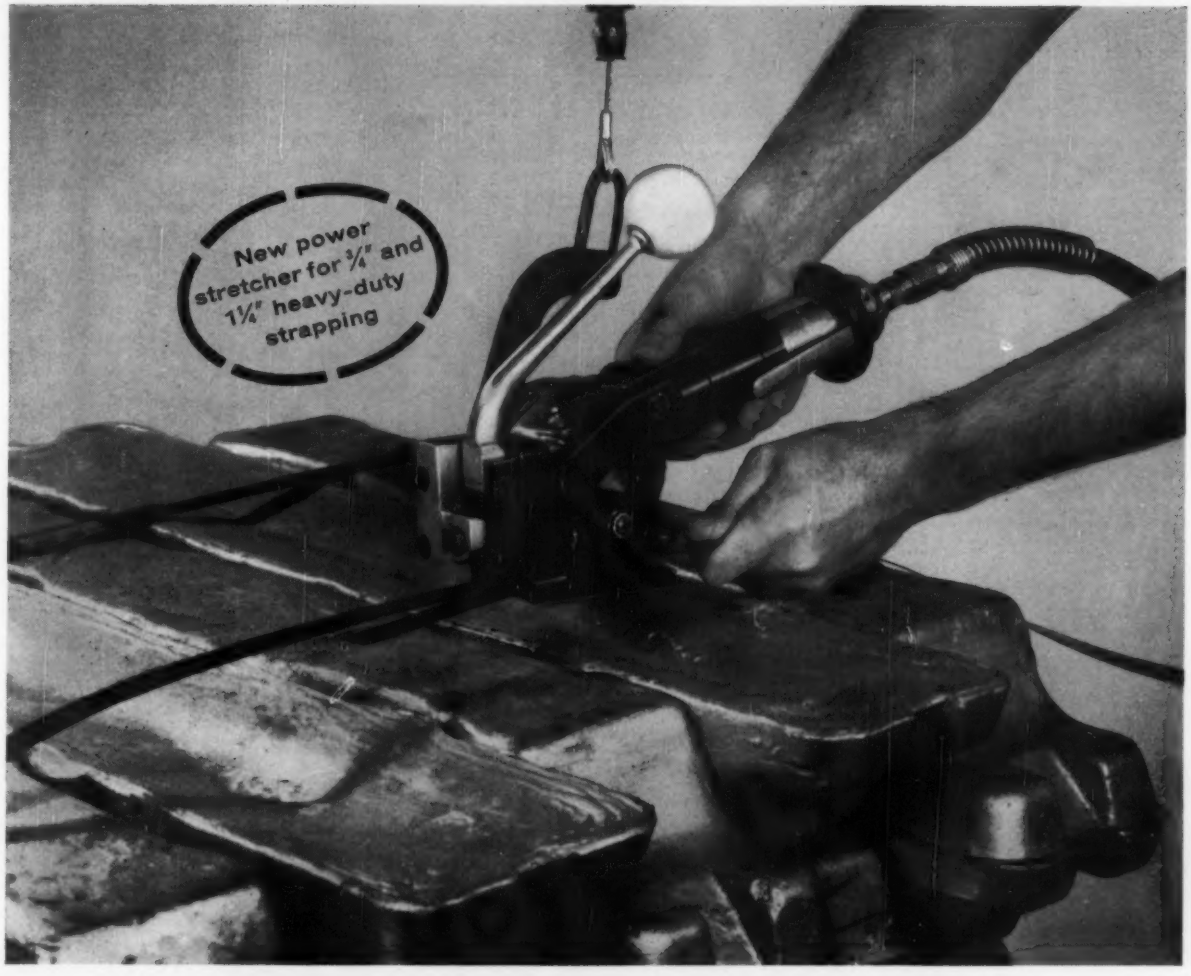
Cincinnati — Market dropped $2.50 for prime grades on new orders for the month. Factory lists stayed in the area for about $36 on cars. Secondary grades dropped by about $1.

Buffalo—Inactivity continues in the market. Prices are unchanged. A first-of-the-month sale is expected soon and dealers feel the sale will be at quoted prices.

Boston—This market is still in the doldrums. Price of No. 2 bundles tumbled $4 to $12-$13 on appraisal. Other prices are unchanged.

West Coast — Despite near-capacity operations, mill orders for scrap remain at the same level as in previous months. Prices are unchanged.

Houston — The market remains quiet with no improvement foreseen. Brokers say there is no export business in sight. Price on No. 2 bundles dropped $2.



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The new B1R pneumatic stretcher

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Your Acme Idea Man can demonstrate the money-saving advantages of the B1R Stretcher as it applies to your packaging operations.

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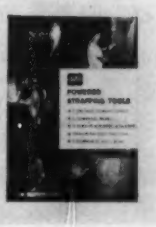

Contact your Acme Idea Man at the nearest Acme Steel Company office. Or write: Dept. IFU-59, Acme Steel Products Division, Acme Steel Company, Chicago 27, Illinois. In Canada, Acme Steel Company of Canada, Ltd., 743 Warden Ave., Toronto 13, Ontario.

ACME STEEL **STEEL STRAPPING**

SCRAP PRICES *(Effective May 5, 1959)*

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Pittsburgh

No. 1 hvy. melting	$35.00 to $36.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 dealer bundles	38.00 to 39.00
No. 1 factory bundles	42.00 to 43.00
No. 2 bundles	25.00 to 26.00
No. 1 busheling	37.00 to 38.00
Machine shop turn.	19.00 to 20.00
Shoveling turnings	26.00 to 27.00
Cast iron borings	25.00 to 26.00
Low phos. punch'gs plate	42.00 to 43.00
Heavy turnings	29.00 to 30.00
No. 1 RR hvy. melting	37.00 to 38.00
Scrap rails, random lgth.	50.00 to 51.00
Rails 2 ft and under	54.00 to 55.00
RR specialties	44.00 to 45.00
No. 1 machinery cast.	49.00 to 50.00
Cupola cast.	45.00 to 46.00
Heavy breakable cast.	43.00 to 44.00
Stainless	
18-8 bundles and solids	230.00 to 235.00
18-8 turnings	115.00 to 120.00
430 bundles and solids	130.00 to 135.00
410 turnings	55.00 to 60.00

Chicago

No. 1 hvy. melting	$32.00 to $33.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 dealer bundles	32.00 to 33.00
No. 1 factory bundles	37.00 to 38.00
No. 2 bundles	21.00 to 22.00
No. 1 busheling	32.00 to 33.00
Machine shop turn.	15.00 to 16.00
Mixed bor. and turn.	17.00 to 18.00
Shoveling turnings	17.00 to 18.00
Cast iron borings	17.00 to 18.00
Low phos. forge crops	44.00 to 45.00
Low phos. punch'gs plate, ¼ in. and heavier	41.00 to 42.00
Low phos. 2 ft and under	39.00 to 40.00
No. 1 RR hvy. melting	36.00 to 37.00
Scrap rails, random lgth.	42.00 to 43.00
Rerolling rails	54.00 to 55.00
Rails 2 ft and under	51.00 to 52.00
Angles and splice bars	46.00 to 47.00
RR steel car axles	62.00 to 63.00
RR couplers and knuckles	44.00 to 45.00
No. 1 machinery cast.	52.00 to 53.00
Cupola cast.	45.00 to 46.00
Cast iron wheels	38.00 to 39.00
Malleable	54.00 to 55.00
Stove plate	43.00 to 44.00
Steel car wheels	42.00 to 43.00
Stainless	
18-8 bundles and solids	220.00 to 225.00
18-8 turnings	120.00 to 125.00
430 bundles and solids	115.00 to 120.00
430 turnings	55.00 to 60.00

Philadelphia Area

No. 1 hvy. melting	$33.00 to $34.00
No. 2 hvy. melting	27.00 to 28.00
No. 1 dealer bundles	36.00 to 37.00
No. 2 bundles	21.00 to 22.00
No. 1 busheling	35.00 to 36.00
Machine shop turn.	17.00 to 19.00
Mixed bor. short turn.	17.00 to 19.00
Cast iron borings	17.00 to 19.00
Shoveling turnings	23.00 to 24.00
Clean cast. chem. borings	26.00 to 27.00
Low phos. 5 ft and under	39.00 to 40.00
Low phos. 2 ft punch'gs	41.00 to 42.00
Elec. furnace bundles	38.00 to 39.00
Heavy turnings	32.00 to 33.00
RR specialties	42.00 to 43.00
Rails 18 in. and under	58.00 to 60.00
Cupola cast.	40.00 to 41.00
Heavy breakable cast.	42.00 to 43.00
Cast iron car wheels	44.00 to 45.00
Malleable	67.00 to 68.00
No. 1 machinery cast.	49.00 to 50.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$31.50 to $32.50
No. 2 hvy. melting	26.50 to 27.50
No. 1 dealer bundles	31.50 to 32.50
No. 2 bundles	20.00 to 21.00
Machine shop turn.	14.00 to 15.00
Shoveling turnings	16.00 to 17.00
Cast iron borings	16.00 to 17.00
Low phos. 18 in. and under	40.00 to 41.00
Rails, random length	46.00 to 47.00
Rails, 18 in. and under	53.00 to 54.00
No. 1 cupola cast.	43.00 to 44.00
Hvy. breakable cast.	40.00 to 41.00
Drop broken cast.	48.00 to 49.00

Youngstown

No. 1 hvy. melting	$36.50 to $37.50
No. 2 hvy. melting	30.50 to 31.50
No. 1 dealer bundles	36.50 to 37.50
No. 2 bundles	23.00 to 24.00
Machine shop turn.	18.50 to 19.50
Shoveling turnings	23.50 to 24.50
Low phos. plate	38.00 to 39.00

Cleveland

No. 1 hvy. melting	$33.00 to $34.00
No. 2 hvy. melting	27.00 to 28.00
No. 1 dealer bundles	33.00 to 34.00
No. 1 factory bundles	38.00 to 39.00
No. 2 bundles	19.50 to 20.50
No. 1 busheling	33.00 to 34.00
Machine shop turn.	15.00 to 16.00
Mixed bor. and turn.	20.00 to 21.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	20.00 to 21.00
Cut structural & plates, 2 ft & under	40.00 to 41.00
Drop forge flashings	33.00 to 34.00
Low phos. punch'gs plate	34.00 to 35.00
Foundry steel, 2 ft & under	35.00 to 36.00
No. 1 RR hvy. melting	38.00 to 39.00
Rails 2 ft and under	56.00 to 57.00
Rails 18 in. and under	57.00 to 58.00
Steel axle turnings	24.00 to 25.00
Railroad cast.	53.00 to 54.00
No. 1 machinery cast.	51.00 to 52.00
Stove plate	48.00 to 49.00
Malleable	66.00 to 67.00
Stainless	
18-8 bundles	215.00 to 225.00
18-8 turnings	115.00 to 120.00
430 bundles	120.00 to 125.00

Buffalo

No. 1 hvy. melting	$32.00 to $33.00
No. 2 hvy. melting	27.00 to 28.00
No. 1 busheling	32.00 to 33.00
No. 1 dealer bundles	32.00 to 33.00
No. 2 bundles	22.00 to 23.00
Machine shop turn.	16.00 to 17.00
Mixed bor. and turn.	17.00 to 18.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	17.00 to 18.00
Low phos. plate	37.00 to 38.00
Structurals and plate, 2 ft and under	41.00 to 42.00
Scrap rails, random lgth.	39.00 to 40.00
Rails 2 ft and under	49.00 to 50.00
No. 1 machinery cast.	50.00 to 51.00
No. 1 cupola cast.	46.00 to 47.00

St. Louis

No. 1 hvy. melting	$33.00 to $34.00
No. 2 hvy. melting	31.00 to 32.00
No. 1 dealer bundles	37.00 to 38.00
No. 2 bundles	23.00 to 24.00
Machine shop turn.	12.50 to 13.50
Shoveling turnings	15.00 to 16.00
Cast iron borings	18.00 to 19.00
No. 1 RR hvy. melting	37.00 to 38.00
Rails, random lengths	45.00 to 46.00
Rails, 18 in. and under	49.00 to 50.00
Angles and splice bars	44.00 to 45.00
RR specialties	42.00 to 43.00
Cupola cast.	48.00 to 49.00
Heavy breakable cast.	40.00 to 41.00
Cast iron brake shoes	38.00 to 39.00
Stove plate	45.00 to 46.00
Cast iron car wheels	40.00 to 41.00
Rerolling rails	54.00 to 55.00
Unstripped motor blocks	41.00 to 42.00

Birmingham

No. 1 hvy. melting	$30.00 to $31.00
No. 2 hvy. melting	25.00 to 26.00
No. 1 dealer bundles	30.00 to 31.00
No. 2 bundles	21.00 to 22.00
No. 1 busheling	30.00 to 31.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	14.00 to 15.00
Electric furnace bundles	36.00 to 37.00
Elec. furnace, 3 ft & under	33.00 to 34.00
Bar crops and plate	40.00 to 41.00
Structural and plate, 2 ft.	39.00 to 40.00
No. 1 RR hvy. melting	33.00 to 34.00
Scrap rails, random lgth.	41.00 to 42.00
Rails, 18 in. and under	49.00 to 50.00
Angles and splice bars	43.00 to 44.00
Rerolling rails	52.00 to 53.00
No. 1 cupola cast.	53.00 to 54.00
Stove plate	53.00 to 54.00
Cast iron car wheels	39.00 to 40.00
Unstripped motor blocks	40.00 to 41.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$26.00 to $27.00
No. 2 hvy. melting	21.00 to 22.00
No. 2 dealer bundles	15.00 to 16.00
Machine shop turnings	9.00 to 10.00
Mixed bor. and turn.	12.00 to 13.00
Shoveling turnings	14.00 to 15.00
Clean chem. cast. borings	23.00 to 25.00
No. 1 machinery cast.	37.00 to 38.00
Mixed yard cast.	35.00 to 36.00
Heavy breakable cast.	33.00 to 34.00
Stainless	
18-8 prepared solids	195.00 to 200.00
18-8 turnings	85.00 to 90.00
430 prepared solids	85.00 to 90.00
430 turnings	20.00 to 25.00

Detroit

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$27.00 to $28.00
No. 2 hvy. melting	18.00 to 19.00
No. 1 dealer bundles	29.00 to 30.00
No. 2 bundles	16.00 to 17.00
No. 1 busheling	27.00 to 28.00
Drop forge flashings	26.00 to 27.00
Machine shop turn.	9.00 to 10.00
Mixed bor. and turn.	10.00 to 11.00
Shoveling turnings	11.00 to 12.00
Cast iron borings	10.00 to 11.00
Heavy breakable cast.	31.00 to 32.00
Mixed cupola cast.	39.00 to 40.00
Automotive cast.	46.00 to 47.00
Stainless	
18-8 bundles and solids	210.00 to 215.00
18-8 turnings	100.00 to 105.00
430 bundles and solids	100.00 to 105.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$24.00 to $25.00
No. 2 hvy. melting	20.00 to 21.00
No. 1 dealer bundles	24.00 to 25.00
No. 2 bundles	12.00 to 13.00
No. 1 busheling	24.00 to 25.00
Machine shop turn.	7.00 to 8.00
Shoveling turnings	11.00 to 12.00
Clean cast. chem. borings	16.00 to 17.00
No. 1 machinery cast.	33.00 to 34.00
Mixed cupola cast.	33.00 to 34.00
Heavy breakable cast.	31.00 to 32.00
Stove plate	29.00 to 30.00

San Francisco

No. 1 hvy. melting	$36.00
No. 2 hvy. melting	33.00
No. 1 dealer bundles	$32.00 to 34.00
No. 2 bundles	22.00
Machine shop turn.	17.00
Cast iron borings	17.00
No. 1 cupola cast.	45.00

Los Angeles

No. 1 hvy. melting	$38.00
No. 2 hvy. melting	36.00
No. 1 dealer bundles	35.00
No. 2 bundles	18.00
Machine shop turn.	$16.00 to 17.00
Shoveling turnings	18.00 to 19.00
Cast iron borings	18.00 to 19.00
Elec. furn. 1 ft and under (foundry)	49.00
No. 1 cupola cast.	45.00

Seattle

No. 1 hvy. melting	$35.00
No. 2 hvy. melting	33.00
No. 2 bundles	22.00
No. 1 cupola cast.	36.00
Mixed yard cast.	36.00

Hamilton, Ont.

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$32.25
No. 2 hvy. melting	28.25
No. 1 dealer bundles	32.25
No. 2 bundles	22.75
Mixed steel scrap	24.25
Bush., new fact., prep'd	32.25
Bush., new fact., unprep'd	26.25
Machine shop turn.	14.00
Shortsteel turn.	17.00
Mixed bor. and turn.	13.00
Rails, rerolling	37.00
Cast scrap	$46.50 to 48.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$34.00
No. 2 hvy. melting	31.00
No. 2 bundles	20.00
Machine shop turn.	16.00
Shoveling turnings	20.00
Cut structural plate 2 ft & under	$44.00 to 45.00
Unstripped motor blocks	37.00 to 38.00
Cupola cast.	44.00 to 45.00
Heavy breakable cast.	28.00 to 29.00

Mechanized scrap shear now available in capacities of

350, 750 AND 900 TONS

One of these new shear capacities should be right for your operation. If so, you can get increased output with economy of operation through mechanized preparation of scrap. A Farrel Watson-Stillman shear can cut your labor cost by as much as 75%, as only three men are needed for the job—one to run the shear, another to operate a crane and a third to watch for derelict material in loading.

Arranged for manual and semi-automatic operation, all movements are controlled by push button from the operator's station. These machines are designed for continuous outdoor service in any weather.

Ask for a quotation on the size that will suit your requirements.

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WS-59

FARREL
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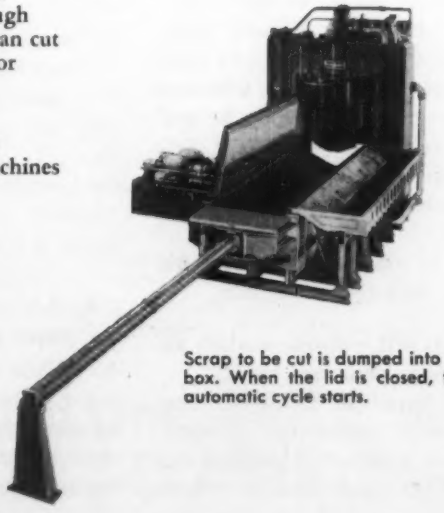

Scrap to be cut is dumped into charging box. When the lid is closed, the semi-automatic cycle starts.

Is U.S. Lead-Zinc Really Hurting?

Congressman Ed Edmondson is from a part of Oklahoma in which a number of lead-zinc companies are headquartered. He is a member of the House Interior Committee, further a member of a mines and mining subcommittee.

Says the Oklahoma Democrat, "The economy of my entire district is vitally affected by the depressed condition of lead and zinc, and the entire nation is being affected by the domestic mining slump."

Mr. Edmondson (above) introduced bills in connection with lead-zinc problems in the 84th, 85th and 86th Congresses. Recently he and several colleagues visited the Tri-State Area (Missouri, Oklahoma, Kansas), lead-zinc mining capital of the U. S.

Here is what he says about his trip and lead-zinc problems:

Q. Has soft lead-zinc markets hit the Tri-State area very hard?

A. "We found all the mines shut down, with expensive pumping operations going on throughout the field. In the small town of Picher, for example, we found more than 700 families subsisting on a dole of surplus farm products. Unemployment compensation has been exhausted, and union representatives said that about two-thirds of the lead and zinc miners in the area have had to leave the district and seek jobs elsewhere."

Q. What did mine management say about the situation?

A. "The manager of the Eagle-Picher Co. pointed out that the problem of unworked mines flooding is very serious. Keeping them dry is expensive, but if they were allowed to fill with water it might well be economically unfeasible ever to work them again. This witness described proven reserves in the area as between 20 and 30 million tons.

"Tom Kiser, mine operator and chairman of the Tri-State Lead and Zinc Ore Producers Assn. says that imports are the major reason the industry has gone from bad to worse in the last two years.

"Most miners I questioned about a solution preferred a tariff or import tax approach, although more than 20 expressed their support for the combined quota and incentive payment proposal recently introduced in the Senate."

Q. Do you believe imports are the major problem?

A. "While other factors contribute to the problem, there is no doubt in my mind that imports are the principal reason for the trouble. Imported lead and zinc has taken over three-fourths of this market where it formerly supplied only one-fourth.

"The argument that Tri-State mines are high-cost, with low grade ore just isn't borne out by the record to be the sole answer. Our committee checked the Flat River District of Southeastern Missouri, where ore is among the richest on the continent. The area is generally depressed, with over 600 miners unemployed."

Q. What's the answer?

A. "My personal preference is for a sliding scale import tax, similar to that proposed by the Administration two years ago, under which an import tax on lead and zinc would go into effect when domestic prices slip below certain statutory minimums, necessary to keep our own mines operating. When these minimum prices prevail, there would be no import tax.

"As an alternative we could use realistic quotas, much stiffer than those now in effect, or we could employ straight tariffs or further stockpiling."

Tin prices for the week: April 29—102.75; April 30—102.625; May 1—102.50; May 4—102.625; May 5—102.625.*

* Estimate.

Primary Prices

(cents per lb)	current price	last price	date of change
Aluminum pig	24.70	24.00	8/1/58
Aluminum ingot	26.80	26.10	8/1/58
Copper (E)	31.50	30.00	3/9/59
Copper (CS)	32.00	32.50	4/30/59
Copper (L)	31.50	30.00	3/9/59
Lead, St. L.	11.30	10.80	4/20/59
Lead, N. Y.	11.50	11.00	4/20/59
Magnesium ingot	38.00	34.50	8/13/58
Magnesium pig	35.25	33.75	8/13/58
Nickel	74.00	64.50	12/6/58
Titanium sponge	182-182	185-205	11/3/58
Zinc, E. St. L.	11.00	11.50	2/25/59
Zinc, N. Y.	11.50	12.00	2/25/59

ALUMINUM: 99% ingot frt allwd. COPPER: (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. LEAD: common grade. MAGNESIUM: 99.8% pig Velasco, Tex. NICKEL: Port Colbourne, Canada. ZINC: prime western. Tin: See above; Other primary prices, pg. 156.

***Experience**—the added alloy in **Allegheny Ludlum** tool steels*

Careful addition of sulfur to melt guarantees typical sulfide distribution, as shown in photomicrograph of longitudinal specimen of EZ MACHINING tool steel.

Sulfur addition to melt held to narrow range in Allegheny Ludlum's EZ MACHINING GRADES

Uniform, finely-distributed sulfides mean uniform machining, uniform high finish, uniform long tool life order after order

Adding sulfur, actually an impurity, to a tool steel melt to make it free-machining must be done with care and precision. That's why Allegheny Ludlum maintains an extremely close average range in adding sulfur to its EZ MACHINING grades. But mere range, however narrow, is not enough. A-L has developed special techniques in adding sulfur and nucleating agents to produce the uniform, finely-distributed sulfides that characterize good free-machining tool steels.

A-L's extra care means you can standardize your machining operations from piece to piece and order to order. This reproducibility is reflected in uniform *machining;* uniform *high finish;* uniform *long tool life.*

For example, in the production of hobs these machining properties in Allegheny Ludlum's EZ MACHINING steels minimize the costly "backing off" operation for back clearance of multiple teeth, eliminating complicated extra heat treatment. Lower residual stresses are set up, because the steel has a lower resistance to the cutting action. Naturally, hobbing is only one of the situations where these free-machining characteristics can benefit you.

Allegheny Ludlum stocks a complete line of tool steel sizes and grades. Call your nearest A-L representative; you'll get quick service and counsel on such problems as heat treating, machining, grade selection, etc. Or write for A-L's publication list which gives full data on the more than 125 technical publications offered. They'll make your job easier. *ALLEGHENY LUDLUM STEEL CORPORATION, Oliver Building, Pittsburgh 22, Pa. Address Dept. A-17*

WBW 7288

ALLEGHENY LUDLUM

Tool Steel warehouse stocks throughout the country... Check the yellow pages

every grade of tool steel... every help in using it

MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. ship pt., frt. allowed)

Flat Sheet (Mill Finish and Plate)

("F" temper except 6061-0)

Alloy	.032	.081	.136 .249	.250-3
1100, 3003	45.7	43.8	42.8	43.3
5052	53.1	48.4	46.9	46.0
6061-0	50.1	45.7	43.9	44.9

Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
6-8	42.7-44.2	51.1-54.8
12-14	42.7-44.2	52.0-56.5
24-26	43.2-44.7	62.8-67.5
36-38	46.7-49.2	86.9-90.5

Screw Machine Stock—2011-T-3

Size"	¼	⅜-⅝	¾-1	1¼-1½
Price	62.0	61.2	59.7	57.3

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"→	72	96	120	144
.019 gage	$1 411	$1 884	$2 353	$2 823
.024 gage	1.762	2 349	2 937	3 524

MAGNESIUM

(F.o.b. shipping Pt., carload frt. allowed)

Sheet and Plate

Type→ Gage→	250 3.00	.250-2.00	.188	.081	.032
AZ31B Stand. Grade	.....	67.9	69.0	77.9	103.1
AZ31B Spec.	.....	93.3	95.7	108.7	171.3
Tread Plate	.....	70.6	71.7	.....	.....
Tooling Plate	73.0	.....	.....	.....	.....

Extruded Shapes

factor→	6-8	12-14	24-26	36-38
Comm. Grade (AZ31C)	65.3	65.3	66.1	71.5
Spec. Grade (AZ31B)	84.6	85.7	90.6	104.2

Alloy Ingot

AZ91B (Die Casting) ..... 37.25 (delivered)
AZ63A, AZ92A, AZ91C (Sand Casting) 40.75 (Velasco, Tex.)

NICKEL, MONEL, INCONEL

(Base prices f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	126	106	128
Strip, CR	124	108	138
Rod, bar, HR	107	89	109
Angles, HR	107	89	109
Plates, HR	120	105	121
Seamless tube	157	129	200
Shot, blocks	...	87	...

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	55.63	.....	52.86	55.82
Brass, Yellow	48.24	48.75	48.18	51.06
Brass, Low	51.23	51.77	51.17	54.54
Brass, R L	52.29	52.83	52.23	55.60
Brass, Naval	52.80	.....	46.61	56.21
Munts Metal	50.85	.....	46.16	.....
Comm. Bz.	53.90	54.44	53.84	56.96
Mang. Bz	56.54	.....	50.14	.....
Phos. Bz. 5%	75.34	.....	75.84	.....

Free Cutting Brass Rod 32.73

TITANIUM

(Base prices, f.o.b. mill)

Sheet and strip, commercially pure, $6.90-$7.40; alloy, $14.35. Plate, HR, commercially pure, $5.00-$5.75; alloy, $7.75-$8.50. Wire, rolled and/or drawn, commercially pure, $5.50-$6.00; alloy, $8.00-$9.50; Bar, HR or forged, commercially pure, $4.25-$4.65; alloy, $4.25-$7.15; billets, HR, commercially pure, $3.55-$4.10; alloy, $3.55-$5.75.

PRIMARY METAL

(Cents per lb unless otherwise noted)

Antimony, American, Laredo, Tex.. 29.50
Beryllium aluminum 5% Be, Dollar per lb contained Be $74.75
Beryllium copper, per lb cont'd Be.$43.00
Beryllium 97% lump or beads, f.o.b. Cleveland, Reading $71.50
Bismuth, ton lots .....$ 2.25
Cadmium, del'd .....$ 1.30
Calcium, 99.9% small lots .....$ 4.55
Chromium, 99.8% metallic basis...$ 1.31
Cobalt, 97-99% (per lb) ....$1.75 to $1.82
Germanium, per gm, f.o.b. Miami, Okla., refined .....35.00 to 42.00
Gold, U. S. Treas., per troy oz. $35.00
Indium, 99.9%, dollars per troy oz..$ 2.25
Iridium, dollars per troy oz. ...$75 to $85
Lithium, 98% .....$11.00 to $14.00
Magnesium, sticks, 100 to 500 lb.... 59.00
Mercury, dollars per 76-lb flask f.o.b. New York .....$245 to $249
Nickel oxide sinter at Buffalo, N. Y., or other U. S. points of entry, contained nickel 69.60
Palladium, dollars per troy oz...$18 to $20
Platinum, dollars per troy oz...$77 to $80
Rhodium .....$120.00 to $125.00
Silver ingots (¢ per troy oz.) 91.375
Thorium, per kg. $43.00
Vanadium .....$ 3.45
Zirconium sponge .....$ 5.00

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 ingot
No. 115 ..... 30.25
No. 120 ..... 29.00
No. 123 ..... 28.00
80-10-10 ingot
No. 305 ..... 34.50
No. 315 ..... 32.50
88-10-2 ingot
No. 210 ..... 43.50
No. 215 ..... 39.25
No. 245 ..... 35.00
Yellow ingot
No. 405 ..... 24.75
Manganese bronze
No. 421 ..... 27.75

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys
0.30 copper max. 24.75-25.00
0.60 copper max. 24.50-24.75
Piston alloys (No. 122 type)..24.25-25.25
No. 12 alum. (No. 2 grade)...21.50-22.00
108 alloy 22.00-22.50
195 alloy 25.00-26.00
13 alloy (0.60 copper max.)...24.25-24.75
AXS-679 (1 pct zinc) 21.75-22.25

(Effective May 4, 1959)

Steel deoxidizing aluminum notch bar granulated or shot

Grade 1—95-97½% 22.50-23.50
Grade 2—92-95% 21.25-22.25
Grade 3—90-92% 20.25-21.25
Grade 4—85-90% 17.50-18.50

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	27½	26¾
Yellow brass	20⅝	18¾
Red brass	24¼	23½
Comm. bronze	25⅛	24⅜
Mang. bronze	19⅛	18⅝
Free cutting rod ends.	20½	

Customs Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 27½
No. 2 copper wire 26
Light copper 24
*Refinery brass 25½
Copper bearing material 24¾
*Dry copper content.

Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 27½
No. 2 copper wire 26
Light copper 24
No. 1 composition 21½
No. 1 comp. turnings 21
Hvy. yellow brass solids 15¾
Brass pipe 16½
Radiators 17

Aluminum

Mixed old cast. ..... 12 —13
Mixed new clips ..... 15 —16
Mixed turnings, dry ..... 13 —14

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Copper and Brass

No. 1 copper wire ..... 25 —25½
No. 2 copper wire ..... 23 —23½
Light copper ..... 21 —21½
Auto radiators (unsweated). 14½—15
No. 1 composition ..... 19 —19½
No. 1 composition turnings .. 17½—18
Cocks and faucets ..... 15 —15½
Clean heavy yellow brass ... 13½—13¾
Brass pipe ..... 15 —15½
New soft brass clippings .... 15¾—16¼
No. 1 brass rod turnings .... 13 —13½

Aluminum

Alum. pistons and struts .... 6 — 6½
Aluminum crankcase ..... 9½—10
1100 (2s) aluminum clippings 13 —13½
Old sheet and utensils ..... 9½—10
Borings and turnings ..... 6 — 6½
Industrial castings ..... 9½—10
2020 (24S) clippings ..... 11 —11½

Zinc

New zinc clippings ..... 4¾— 5¼
Old zinc ..... 3¼— 3½
Zinc routings ..... 2 — 2¼
Old die cast scrap ..... 1¾— 2

Nickel and Monel

Pure nickel clippings 52-54
Clean nickel turnings 37-40
Nickel anodes 52-54
Nickel rod ends 52-54
New Monel clippings 30-32
Clean Monel turnings 30-32
Old sheet Monel 26-28
Nickel Silver clippings, mixed 18
Nickel silver turnings, mixed 15

Lead

Soft scrap lead ..... 7— 7¼
Battery plates (dry) ..... 2 — 2¼
Batteries, acid free ..... 1⅞— 2⅛

Miscellaneous

Block tin ..... 77 —78
No. 1 pewter ..... 59 —60
Auto babbitt ..... 40 —41
Mixer common babbitt ..... 9½—10
Solder joints ..... 13¼—13¾
Siphon tops 42
Small foundry type ..... 9½—10
Monotype ..... 9½—10
Lino. and stereotype ..... 8½— 9
Electrotype ..... 7 — 7½
Hand picked type shells .... 5¼— 5¾
Lino. and stereo. dross ..... 2¼— 2⅝
Electro dross ..... 2¼— 2⅝

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PILING	SHAPES STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide-Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Bethlehem, Pa.			$119.00 *B3*		5.55 *B3*	8.10 *B3*	5.55 *B5*						
	Buffalo, N. Y.	$80.00 *R3, B3*	$99.50 *R3, B3*	$119.00 *R3, B3*	6.50 *B3*	5.55 *B3*	8.10 *B3*	5.55 *B3*	5.10 *B3, R3*	7.425 *S10, R7*	7.575 *B3*			
	Phila., Pa.									7.875 *P15*				
	Harrison, N. J.													15.55 *C11*
	Conshohocken, Pa.		$104.50 *A2*	$126.00 *A2*					5.15 *A2*		7.575 *A2*			
	New Bedford, Mass.									7.875 *R6*				
	Johnstown, Pa.	$80.00 *B3*	$99.50 *B3*	$119.00 *B3*		5.55 *B3*	8.10 *B3*							
	Boston, Mass.									7.975 *T8*				
	New Haven, Conn.									7.875 *D1*				
	Baltimore, Md.									7.425 *T8*				15.90 *T8*
	Phoenixville, Pa.					5.55 *P2*		5.55 *P2*						
	Sparrows Pt., Md.								5.10 *B3*		7.575 *B3*			
	New Britain, Bridgeport, Wallingford, Conn.			$119.00 *N8*						7.875 *W1,S7*				
	Pawtucket, R. I. Worcester, Mass.									7.975 *N7, A5*				15.90 *N7* 15.70 *T8*
MIDDLE WEST	Alton, Ill.								5.30 *L1*					
	Ashland, Ky.								5.10 *A7*		7.575 *A7*			
	Canton-Massillon, Dover, Ohio		$102.00 *R3*	$119.00 *R3,* $114.00 *T5*						7.425 *G4*		10.80 *G4*		
	Chicago, Franklin Park, Evanston, Ill.	$80.00 *U1, R3*	$99.50 *U1, R3,W8*	$119.00 *U1, R3,W8*	6.50 *U1*	5.50 *U1, W8,P13*	8.05 *U1, Y1,W8*	5.50 *U1*	5.10 *W8, N4,A1*	7.525 *A1,T8, M8*	7.575 *W8*		8.40 *W8, S9,I3*	15.55 *A1, S9,G4,T8*
	Cleveland, Ohio									7.425 *A5,J3*		10.75 *A5*	8.40 *J3*	
	Detroit, Mich.			$119.00 *R5*					5.10 *G3, M2*	7.425 *M2, S1, D1,P11*	7.575 *G3*	10.80 *S1*		
	Anderson, Ind.									7.425 *G4*				
	Gary, Ind. Harbor, Indiana	$80.00 *U1*	$99.50 *U1*	$119.00 *U1, Y1*		5.50 *U1, I3*	8.05 *U1, J3*	5.50 *I3*	5.10 *U1, I3,Y1*	7.425 *Y1*	7.575 *U1, I3,Y1*	10.90 *Y1*	8.40 *U1, Y1*	
	Sterling, Ill.	$80.00 *N4*				5.50 *N4*	7.75 *N4*	5.50 *N4*	5.20 *N4*					
	Indianapolis, Ind.									7.575 *R5*				15.70 *R5*
	Newport, Ky.								5.10 *A9*				8.40 *A9*	
	Niles, Warren, Ohio Sharon, Pa.		$99.50 *S1, C10*	$119.00 *C10,S1*					5.10 *R3, S1*	7.425 *R3, T4,S1*	7.575 *R3, S1*	10.80 *R3, S1*	8.40 *S1*	15.55 *S1*
	Owensboro, Ky.	$80.00 *G5*	$99.50 *G5*	$119.00 *G5*										
	Pittsburgh, Midland, Butler, Aliquippa, McKeesport, Pa.	$80.00 *U1, P6*	$99.50 *U1, C11,P6*	$119.00 *U1, C11,B7*	6.50 *U1*	5.50 *U1, J3*	8.05 *U1, J3*	5.50 *U1*	5.10 *P6*	7.425 *J3,B4* 7.525 *E3*			8.40 *S9*	15.55 *S9*
	Weirton, Wheeling, Follansbee, W. Va.				6.50 *U1, W3*	5.50 *W3*		5.50 *W3*	5.10 *W3*	7.425 *F3*	7.575 *W3*	10.80 *W3*		
	Youngstown, Ohio	$80.00 *R3*	$99.50 *Y1, C10*	$119.00 *Y1*			8.05 *Y1*		5.10 *U*	7.425 *Y1,R5*	7.575 *U1, Y1*	10.95 *Y1*	8.40 *U1, Y1*	15.55 *R5, Y1*
WEST	Fontana, Cal.	$90.50 *K1*	$109.00 *K1*	$140.00 *K1*		6.30 *K1*	8.85 *K1*	6.45 *K1*	5.325 *K1*	9.20 *K1*				
	Geneva, Utah		$99.50 *C7*			5.50 *C7*	8.05 *C7*							
	Kansas City, Mo.					5.60 *S2*	8.15 *S2*						8.65 *S2*	
	Los Angeles, Torrance, Cal.		$109.00 *B2*	$139.00 *B2*		6.20 *C7, B2*	8.75 *B2*		5.85 *C7, B2*	9.30 *C1,R5*			9.60 *B2*	17.75 *J3*
	Minnequa, Colo.					5.80 *C6*			6.20 *C6*	9.375 *C6*				
	Portland, Ore.					6.25 *O2*								
	San Francisco, Niles, Pittsburg, Cal.		$109.00 *B2*			6.15 *B2*	8.70 *B2*		5.85 *C7, B2*					
	Seattle, Wash.		$109.00 *B2*			6.25 *B2*	8.80 *B2*		6.10 *B2*					
SOUTH	Atlanta, Ga.					5.70 *A8*			5.10 *A8*					
	Fairfield, Ala. City, Birmingham, Ala.	$80.00 *T2*	$99.50 *T2*			5.50 *T2 R3,C16*	8.05 *T2*		5.10 *T2, R3,C16*		7.575 *T2*			
	Houston, Lone Star, Texas		$104.50 *S2*	$124.00 *S2*		5.60 *S2*	8.15 *S2*						8.65 *S2*	

(Effective May 4, 1959)

STEEL PRICES

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		SHEETS									WIRE ROD	TINPLATE†		
		Hot-rolled *18* ga. & hvyr.	Cold-rolled	Galvanized (Hot-dipped)	Enameling	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.		Cokes* *1.25*-lb. base box	Electro** *0.25*-lb. base box	Holloware Enameling *29* ga.
EAST	Buffalo, N. Y.	5.10 *B3*	6.275 *B3*				7.525 *B3*	9.275 *B3*		6.40 *W6*	† Special coated mfg. terne deduct 35¢ from 1.25-lb. coke base box price, 0.75 lb./0.25 lb. add 55¢. Can-making quality BLACKPLATE 55 to 128 lb. deduct $2.20 from 1.25 lb. coke base box. * COKES: 1.50-lb. add 25¢. **ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add $1.00. Differential 1.00 lb./0.25 lb. add 65¢.		
	Claymont, Del.												
	Conshohocken, Pa.												
	Harrisburg, Pa.	5.15 *A2*	6.325 *A2*				7.575 *A2*						
	Hartford, Conn.												
	Johnstown, Pa.									6.40 *B3*			
	Fairless, Pa.	5.15 *U1*	6.325 *U1*				7.575 *U1*	9.325 *U1*			$10.50 *U1*	$9.20 *U1*	
	New Haven, Conn.												
	Phoenixville, Pa.												
	Sparrows Pt., Md.	5.10 *B3*	6.275 *B3*	6.875 *B3*			7.525 *B3*	9.275 *B3*	10.025 *B3*	6.50 *B3*	$10.40 *B3*	$9.10 *B3*	
	Worcester, Mass.									6.70 *A5*			
	Trenton, N. J.												
MIDDLE WEST	Alton, Ill.									6.60 *L1*			
	Ashland, Ky.	5.10 *A7*		6.875 *A7*	6.775 *A7*		7.525 *A7*						
	Canton-Massillon, Dover, Ohio			6.875 *R1, R3*									
	Chicago, Joliet, Ill.	5.10 *W8, A1*					7.525 *U1, W8*			6.40 *A5, R3,W8*			
	Sterling, Ill.									6.50 *N4, K2*			
	Cleveland, Ohio	5.10 *R3, J3*	6.275 *R3, J3*	7.65 *R3**	6.775 *R3*		7.525 *R3, J3*	9.275 *R3, J3*		6.40 *A5*			
	Detroit, Mich.	5.10 *G3, M2*	6.275 *G3, M2*				7.525 *G3*	9.275 *G3*					
	Newport, Ky.	5.10 *A1*	6.275 *A1*										
	Gary, Ind. Harbor, Indiana	5.10 *U1, I3,Y1*	6.275 *U1, I3,Y1*	6.875 *U1, I3*	6.775 *U1, I3,Y1*	7.225 *U1*	7.525 *U1, Y1,I3*	9.275 *U1, Y1*		6.40 *Y1*	$10.40 *U1, Y1*	$9.10 *I3, U1,Y1*	7.85 *U1, Y1*
	Granite City, Ill.	5.20 *G2*	6.375 *G2*	6.975 *G2*	6.875 *G2*							$9.20 *G2*	7.95 *G2*
	Kokomo, Ind.			6.975 *C9*						6.50 *C9*			
	Mansfield, Ohio	5.10 *E2*	6.275 *E2*			7.225 *E2*							
	Middletown, Ohio		6.275 *A7*	6.875 *A7*	6.775 *A7*	7.225 *A7*							
	Niles, Warren, Ohio Sharon, Pa.	5.10 *R3, S1*	6.275 *R3*	6.875 *R3* 7.65 *R3**	6.775 *S1*	7.225 *S1**, *R3*	7.525 *R3, S1*	9.275 *R3,*				$9.10 *R3*	
	Pittsburgh, Midland, Butler, Donora, Aliquippa, McKeesport, Pa.	5.10 *U1, J3,P6*	6.275 *U1, J3,P6*	6.875 *U1, J1* 7.50 *E3**	6.775 *U1*		7.525 *U1, J3*	9.275 *U1, J3*	10.025 *U1, J3*	6.40 *A5, J3,P6*	$10.40 *W5, J3*	$9.10 *U1, J3*	7.85 *U1, J3*
	Portsmouth, Ohio	5.10 *P7*	6.275 *P7*							6.40 *P7*			
	Weirton, Wheeling, Follansbee, W. Va.	5.10 *W3, W5*	6.275 *W3, F3,W5*	6.875 *W3, W5* 7.50 *W3**		7.225 *W3, W5*	7.525 *W3*	9.275 *W3*			$10.40 *W5, W3*	$9.10 *W5, W3*	7.85 *W5*
	Youngstown, Ohio	5.10 *U1, Y1*	6.275 *Y1*	7.50 *J3**	6.775 *Y1*		7.525 *Y1*	9.275 *Y1*		6.40 *Y1*			
WEST	Fontana, Cal.	5.825 *K1*	7.40 *K1*				8.25 *K1*	10.40 *K1*			$11.05 *K1*	$9.75 *K1*	
	Geneva, Utah	5.20 *C7*											
	Kansas City, Mo.									6.65 *S2*			
	Los Angeles, Torrance, Cal.									7.20 *B2*			
	Minnequa, Colo.									6.65 *C6*			
	San Francisco, Niles, Pittsburg, Cal.	5.80 *C7*	7.225 *C7*	7.625 *C7*						7.20 *C7*	$11.05 *C7*	$9.75 *C7*	
SOUTH	Atlanta, Ga.												
	Fairfield, Ala. Alabama City, Ala.	5.10 *T2, R3*	6.275 *T2, R3*	6.875 *T2, R3*	6.775 *T2*					6.40 *T2,R3*	$10.50 *T2*	$9.20 *T2*	
	Houston, Texas									6.65 *S2*			

* Electrogalvanized sheets.

(Effective May 4, 1959)

*7.425 at Sharon-Niles is 7.225

STEEL PRICES

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		BARS						PLATES				WIRE
		Carbon† Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
EAST	Bethlehem, Pa.				6.725 *B3*	9.025 *B3*	8.30 *B3*					
	Buffalo, N. Y.	5.675 *R3,B3*	5.675 *R3,B3*	7.70 *B5*	6.725 *B3,R3*	9.025 *B3,B5*	8.30 *B3*	5.30 *B3*				8.00 *W6*
	Claymont, Del.							5.30 *C4*		7.50 *C4*	7.95 *C4*	
	Coatesville, Pa.							5.30 *L4*		7.50 *L4*	7.95 *L4*	
	Conshohocken, Pa.							5.30 *A2*	6.375 *A2*	7.50 *A2*	7.95 *A2*	
	Harrisburg, Pa.							5.30 *P2*	6.375 *P2*			
	Milton, Pa.	5.825 *M7*	5.825 *M7*									
	Hartford, Conn.			8.15 *R3*		9.325 *R3*						
	Johnstown, Pa.	5.675 *B3*	5.675 *B3*		6.725 *B3*		8.30 *B3*	5.30 *B3*		7.50 *B3*	7.95 *B3*	8.00 *B3*
	Fairless, Pa.	5.825 *U1*	5.825 *U1*		6.875 *U1*							
	Newark, Camden, N. J.			8.10 *W10, P10*		9.20 *W10, P10*						
	Bridgeport, Putnam, Willimantic, Conn.			8.20 *W10* 8.15 *J3*	6.80 *N8*	9.175 *N8*						
	Sparrows Pt., Md.		5.675 *B3*					5.30 *B3*		7.50 *B3*	7.95 *B3*	8.10 *B3*
	Palmer, Worcester, Readville, Manafield, Mass.			8.20 *B5, C14*		9.325 *A5,B5*						8.30 *A5, W6*
	Spring City, Pa.			8.10 *K4*		9.20 *K4*						
MIDDLE WEST	Alton, Ill.	5.875 *L1*										8.20 *L1*
	Ashland, Newport, Ky.							5.30 *A7, A9*		7.50 *A9*	7.95 *A7*	
	Canton, Massillon, Manafield, Ohio	6.15* *R3*		7.65 *R3,R2*	6.725 *R3* 6.475 *T5*	9.025 *R3,R2* 8.775 *T5*		5.30 *E2*				
	Chicago, Joliet, Waukegan, Madison, Harvey, Ill.	5.675 *U1,R3, W8,N4,P13*	5.675 *U1,R3, N4,P13,W8* 5.875*L1*	7.65 *A5, W10,W8, B5,L2,N9*	6.725 *U1,R3, W8*	9.025 *A5, W10,W8, L2,N8,B5*	8.30 *U1,W8, R3*	5.30 *U1,A1, W8,13*	6.375 *U1*	7.50 *U1, W8*	7.95 *U1, W8*	8.00 *A5,R3, W8,N4, K2,W7*
	Cleveland, Elyria, Ohio	5.675 *R3*	5.675 *R3*	7.65 *A5,C13, C18*		9.025 *A5, C13,C18*	8.30 *R3*	5.30 *R3,J3*	6.375 *J3*		7.95 *R3,J3*	8.00 *A5, C13,C18*
	Detroit, Mich.	5.675 *G3*	5.675 *G3*	7.90 *P3* 7.85 *P8,B5* 7.65 *R5*	6.725 *R5,G3*	9.025 *R5* 9.225 *B5,P3, P8*	8.30 *G3*	5.30 *G3*		7.50 *G3*	7.95 *G3*	
	Duluth, Minn.											8.00 *A5*
	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.675 *U1,I3, Y1*	5.675 *U1,I3, Y1*	7.65 *R3,J3*	6.725 *U1,I3, Y1*	9.025 *R3,M4*	8.30 *U1,Y1*	5.30 *U1,I3, Y1*	6.375 *J3, I1*	7.50 *U1, Y1*	7.95 *U1, Y1,I3*	8.10 *M4*
	Granite City, Ill.							5.40 *G2*				
	Kokomo, Ind.		5.775 *C9*									8.10 *C9*
	Sterling, Ill.	5.775 *N4*	5.775 *N4*					5.30 *N4*				8.10 *K2*
	Niles, Warren, Ohio Sharon, Pa.			7.65 *C10*	6.725 *C10,*	9.025 *C10*		5.30 *R3,S1*		7.50 *S1*	7.95 *R3, S1*	
	Owensboro, Ky.	5.675 *G5*			6.725 *G5*							
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.675 *U1,J3*	5.675 *U1,J3*	7.65 *A5,B4, R3,J3,C11, W10,S9,C8, M9*	6.725 *U1,J3, C11,B7*	9.025 *A5, W10,R3,S9, C11,C8,M9*	8.30 *U1,J3*	5.30 *U1,J3*	6.375 *U1,J3*	7.50 *U1, J3,B7*	7.95 *U1, J3,B7*	8.00 *A5, J3,P6*
	Portsmouth, Ohio											8.00 *P7*
	Weirton, Wheeling, Follansbee, W. Va.							5.30 *W5*				
	Youngstown, Ohio	5.675 *U1,R3, Y1*	5.675 *U1,R3, Y1*	7.65 *A1,Y1, F2*	6.725 *U1,Y1*	9.025 *Y1,F2*	8.30 *U1,Y1*	5.30 *U1, R3,Y1*		7.50 *Y1*	7.95 *U1,Y1*	8.00 *Y1*
WEST	Emeryville, Fontana, Cal.	6.425 *J5* 6.375 *K1*	6.425 *J5* 6.375 *K1*		7.775 *K1*		9.00 *K1*	6.10 *K1*		8.30 *K1*	8.75 *K1*	
	Geneva, Utah							5.30 *C7*			7.95 *C7*	
	Kansas City, Mo.	5.925 *S2*	5.925 *S2*		6.975 *S2*		8.55 *S2*					8.25 *S2*
	Los Angeles, Torrance, Cal.	6.375 *C7,B2*	6.375 *C7,B2*	9.10 *R3,P14, S12*	7.775 *B2*	11.00 *P14, S12*	8.625 *B2*					8.95 *B2*
	Minnequa, Colo.	6.125 *C6*	6.125 *C6*					6.15 *C6*				8.25 *C6*
	Portland, Ore.	6.425 *O2*	6.425 *O2*									
	San Francisco, Niles, Pittsburg, Cal.	6.375 *C7* 6.425 *B2*	6.375 *C7* 6.425 *B2*				8.675 *B2*					8.95 *C7,C6*
	Seattle, Wash.	6.425 *B2,N6, A10*	6.425 *B2,A10*				8.675 *B2*	6.20 *B2*		8.40 *B2*	8.85 *B2*	
SOUTH	Atlanta, Ga.	5.875 *A8*	5.675 *A8*									8.00 *A8*
	Fairfield City, Ala. Birmingham, Ala.	5.675 *T2,R3, C16*	5.675 *T2,R3, C16*	8.25 *C16*			9.30 *T2*	5.30 *T2,R3*			7.95 *T2*	8.00 *T2,R3*
	Houston, Ft. Worth, Lone Star, Texas	5.925 *S2*	5.925 *S2*		6.975 *S2*		8.55 *S2*	5.40 *S2*		7.60 *S2*	8.05 *S2*	8.25 *S2*

† Merchant Quality—Special Quality 35¢ higher. (Effective May 4, 1959) * Special Quality.

STEEL PRICES

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angel Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, Ohio
A8 Atlantic Steel Co., Atlanta, Ga.
A9 Acme-Newport Steel Co., Newport, Ky.
A10 Alaska Steel Mills, Inc., Seattle, Wash.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.
B6 Brook Plant, Wickwire-Spencer Steel Div., Birdsboro, Pa.
B7 A. M. Byers, Pittsburgh
B8 Braeburn Alloy Steel Corp., Braeburn, Pa.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C4 Claymont Products Dept., Claymont, Del.
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, Pittsburgh
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham
C18 Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.

D1 Detroit Steel Corp., Detroit
D2 Driver, Wilbur B., Co., Newark, N. J.
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire-Reeves Steel Corp., Mansfield, O.
E3 Enamel Products & Plating Co., McKeesport, Pa.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.
G5 Green River Steel Corp., Owenboro, Ky.

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Calif.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.
K4 Keystone Drawn Steel Co., Spring City, Pa.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
M6 Mystic Iron Works, Everett, Mass.
M7 Milton Steel Products Div., Milton, Pa.
M8 Mill Strip Products Co., Evanston, Ill.
M9 Moltrup Steel Products Co., Beaver Falls, Pa.

N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.
N8 Carpenter Steel of New England, Inc., Bridgeport, Conn.
N9 Nelson Steel & Wire Co.

O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Steel Corp., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit
P13 Phoenix Mfg. Co., Joliet, Ill.
P14 Pacific Tube Co.
P15 Philadelphia Steel and Wire Corp.

R1 Reeves Steel & Mfg. Div., Dover, O.
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co., John A., Trenton, N. J.
R5 Jones & Laughlin Steel Corp., Stainless and Strip Div.
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon Pa.
S2 Sheffield Steel Div., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw and Steel Co., Fitchburg, Mass.
S5 Sweet's Steel Co., Williamsport, Pa.
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Div. of Copperweld Steel Co., Carnegie, Pa.
S10 Seneca Steel Service, Buffalo
S11 Southern Electric Steel Co., Birmingham
S12 Sierra Drawn Steel Corp., Los Angeles, Calif.
S13 Seymour Mfg. Co., Seymour, Conn.

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T7 Texas Steel Co., Fort Worth
T8 Thompson Wire Co., Boston

U1 United States Steel Corp., Pittsburgh
U2 Universal Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainless Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago.
W8 Wisconsin Steel Div., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh
W12 Wallace Barnes Steel Div., Bristol, Conn.
Y1 Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING

Base discounts (pct) f.o.b. mills. Base price about $200 per net ton.

	BUTTWELD														SEAMLESS							
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½–3 In.		2 In.		2½ In.		3 In.		3½–4 In.	
STANDARD T. & C.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
Sparrows Pt. *B3*	0.25	+15.0	3.25	+11.0	6.75	+6.50	9.25	+5.75	9.75	+4.75	10.25	+4.25	11.75	+4.50								
Youngstown *R3*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50								
Fontana *K1*	+10.75	+26.00	+7.75	+22.00	+4.25	+17.50	+1.75	+16.75	+1.25	+15.75	+0.75	+15.25	0.75	+15.50								
Pittsburgh *J3*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50	+12.25	+27.25	+5.75	+22.50	+3.25	+20.0	+1.75	+16.50
Alton, Ill. *L1*	0.25	+15.0	3.25	+11.0	6.75	+6.50	9.25	+5.75	9.75	+4.75	10.25	+4.25	11.75	+4.50								
Sharon *M3*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50								
Fairless *N2*	0.25	+15.0	3.25	+11.0	6.75	+6.50	9.25	+5.75	9.75	+4.75	10.25	+4.25	11.75	+4.50								
Pittsburgh *N1*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50	+12.25	+27.25	+5.75	+22.50	+3.25	+20.0	+1.75	+18.50
Wheeling *W5*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50								
Wheatland *W4*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50								
Youngstown *Y1*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50	+12.25	+27.25	+5.75	+22.50	+3.25	+20.0	+1.75	+18.50
Indiana Harbor *Y1*	1.25	+14.0	4.25	+10.0	7.75	+5.50	10.25	+4.75	10.75	+3.75	11.25	+3.25	12.75	+3.50								
Lorain *N2*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50	+12.25	+27.25	+5.75	+22.50	+3.25	+20.0	+1.75	+18.50
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. *B3*	4.75	+9.0	8.75	+5.0	11.75	+0.50	12.25	+1.75	12.75	+0.75	13.25	+0.25	13.75	+1.50								
Youngstown *R3*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Fairless *N2*	4.75	+9.0	8.75	+5.0	11.75	+0.50	12.25	+1.75	12.75	+0.75	13.25	+0.25	13.75	+1.50								
Fontana *K1*	+6.25		+2.25		0.75		1.25		1.75		2.25		2.75									
Pittsburgh *J3*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	+10.75	+24.75	+3.25	+19.0	+0.75	+16.50	4.25	+11.50
Alton, Ill. *L1*	4.75	+9.0	8.75	+5.0	11.75	+0.50	12.25	+1.75	12.75	+0.75	13.25	+0.25	13.75	+1.50								
Sharon *M3*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Pittsburgh *N1*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	+10.75	+24.75	+3.25	+19.0	+0.75	+16.50	4.25	+11.50
Wheeling *W5*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Wheatland *W4*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Youngstown *Y1*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	+10.75	+24.75	+3.25	+19.0	+0.75	+16.50	4.25	+11.50
Indiana Harbor *Y1*	5.75	+8.0	9.75	+4.0	12.75	0.50	13.25	+0.75	13.75	0.25	14.25	0.75	14.75	+0.50								
Lorain *N2*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	+10.75	+24.75	+3.25	+19.0	+0.75	+16.50	4.25	+11.50

Threads only, buttweld and seamless, 2¼ pt. higher discount. Plain ends, buttweld and seamless, 3-in. and under, 5½ pt. higher discount.

Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pt.; 1¼, 1½ and 2-in., 1½ pt.; 2½ and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2½ and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 11.00¢ per lb.

(Effective May 4, 1959)

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	$1.84	T-1
18	4	1	—	5	2.545	T-4
18	4	2	—	—	2.005	T-2
1.5	4	1.5	8	—	1.20	M-1
6	4	3	6	—	1.59	M-3
6	4	2	5	—	1.345	M-2
High-carbon chromium..					.955	D-3, D-5
Oil hardened manganese					.505	O-2
Special carbon					.38	W-1
Extra carbon					.38	W-1
Regular carbon					.325	W-1

Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

CLAD STEEL

Base prices, cents per lb f.o.b.

	Cladding	Plate (*L4, C4, A3, J2*) 10 pct	Plate (*L4, C4, A3, J2*) 15 pct	Plate (*L4, C4, A3, J2*) 20 pct	Sheet (*I2*) 20 pct
Stainless Type	302	.....	.....	.....	37.50
	304	28.80	31.55	34.30	40.00
	316	42.20	46.25	50.25	58.75
	321	34.50	37.75	41.05	47.25
	347	40.80	44.65	48.55	57.00
	405	24.60	26.90	29.25	.....
	410	22.70	24.85	27.00	.....
	430	23.45	25.65	27.90	.....

CR Strip (S9) Copper, 10 pct, 2 sides, 43.15; 1 side, 36.20.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Tie Plates	Track Bolts Untreated
Bessemer *U1*	5.75	6.725	7.25	.....	.....	.....
Cleveland *R5*	.....	.....	.....	.....	.....	15.35
So. Chicago *R3*	.....	.....	.....	10.10	.....	.....
Ensley *T2*	5.75	6.725	.....	.....	.....	.....
Fairfield *T2*	.....	6.725	.....	10.10	6.875	.....
Gary *U1*	5.75	.....	.....	.....	6.875	.....
Ind. Harbor *I3*	.....	.....	.....	10.10	.....	.....
Johnstown *B3*	.....	6.725	.....	.....	.....	.....
Joliet *U1*	.....	.....	7.25	.....	.....	.....
Kansas City *S2*	.....	.....	.....	10.10	.....	15.35
Lackawanna *B3*	5.75	6.725	7.25	.....	6.875	.....
Lebanon *B3*	.....	.....	7.25	.....	.....	15.35
Minnequa *C6*	5.75	7.225	7.25	10.10	6.875	15.35
Pittsburgh *P5*	.....	.....	.....	.....	.....	14.75
Pittsburgh *J3*	.....	.....	.....	10.10	.....	.....
Seattle *B2*	.....	.....	.....	.....	6.75	15.85
Steelton *B3*	5.75	.....	7.25	.....	6.875	.....
Struthers *Y1*	.....	.....	.....	10.10	.....	.....
Torrance *C7*	.....	.....	.....	.....	6.75	.....
Williamsport *S5*	.....	6.725	.....	.....	.....	.....
Youngstown *R3*	.....	.....	.....	10.10	.....	.....

COKE

	Net-Ton
Furnace, beehive (f.o.b.) Connellsville, Pa.	$14.50 to $15.50
Foundry, beehive (f.o.b.)	$18.50
Foundry oven coke	
Buffalo, del'd	$33.25
Detroit f.o.b.	32.00
New England, del'd	33.55
New Haven, f.o.b.	31.00
Kearney, N. J., f.o.b.	31.25
Philadelphia, f.o.b.	31.00
Swedeland, Pa., f.o.b.	31.00
Painesville, Ohio, f.o.b.	34.35
Erie, Pa., f.o.b.	32.00
Cleveland, del'd	34.19
Cincinnati, del'd	32.84
St. Paul, f.o.b.	31.25
St. Louis, f.o.b.	33.00
Birmingham, f.o.b.	30.35
Milwaukee, f.o.b.	32.00
Neville Is., Pa.	30.75

LAKE SUPERIOR ORES

51.50% Fe natural, delivered lower Lake ports. Interim prices for 1959 season. Freight changes for seller's account.

	Gross Ton
Openhearth lump	$12.70
Old range, bessemer	11.85
Old range, nonbessemer	11.70
Mesabi, bessemer	11.60
Mesabi, nonbessemer	11.45
High phosphorus	11.45

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length) Semi-Processed	Cold-Reduced (Coiled or Cut Length) Fully Processed
Field	.....	9.875	.....
Armature	11.70	11.20	11.70
Elect.	12.40	11.90	12.40
Special Motor	.....	12.475	
Motor	13.55	13.05	13.55
Dynamo	14.65	14.15	14.65
Trans. 72	15.70	15.20	15.70
Trans. 65	16.30	Grain Oriented	
Trans. 58	16.80	Trans. 80	19.70
Trans. 52	17.85	Trans. 73	20.20
		Trans. 66	20.70

Producing points: Aliquippa (*J3*); Beech Bottom (*W5*); Brackenridge (*A3*); Granite City (*G2*); Indiana Harbor (*I3*); Mansfield (*E2*); Newport, Ky. (*A9*); Niles, O. (*S1*); Vandergrift (*U1*); Warren, O. (*R3*); Zanesville, Butler (*A7*).

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE Diam. (In.)	GRAPHITE Length (In.)	GRAPHITE Price	CARBON* Diam. (In.)	CARBON* Length (In.)	CARBON* Price
24	84	27.25	40	100,110	12.50
20	72	26.50	35	110	11.20
18	72	27.50	30	110	11.70
14	72	27.25	24	72	11.95
12	72	28.25	20	90	11.55
10	60	29.50	17	72	12.10
10	48	30.00	14	72	12.55
7	60	29.75	10	60	13.80
6	60	33.25	8	60	14.25
4	40	37.00			
3	40	39.25			
2½	30	41.50			
2	24	64.00			

* Prices shown cover carbon nipples.

REFRACTORIES

Fire Clay Brick

Carloads per 1000

Super duty, Mo., Pa., Md., Ky....	$185.00
High duty (except Salina, Pa., add $5.00)	140.00
Medium duty	125.00
Low duty (except Salina, Pa., add $2.00)	103.00
Ground fire clay, net ton, bulk...	22.50

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$158.00
Childs, Hays, Latrobe, Pa.	163.00
Chicago District	168.00
Western Utah	183.00
California	165.00
Super Duty Hays, Pa., Athens, Tex., Windham, Warren, O., Morrisville	163.00-168.00
Silica cement, net ton, bulk, Latrobe	29.75
Silica cement, net ton, bulk, Chicago	26.75
Silica cement, net ton, bulk, Ensley, Ala.	27.75
Silica cement, net ton, bulk, Mt. Union	25.75
Silica cement, net ton, bulk, Utah and Calif.	39.00

Chrome Brick

Per net ton

Standard chemically bonded, Balt.	$109.00
Standard chemically bonded, Curtiner, Calif.	119.00
Burned, Balt.	103.00

Magnesite Brick

Standard, Baltimore	$140.00
Chemically bonded, Baltimore	119.00

Grain Magnesite

St. ⅜ to ½-in. grains

Domestic, f.o.b. Baltimore in bulk.	$73.00
Domestic, f.o.b. Chewalah, Wash., Luning, Nev. in bulk	46.00
in sacks	52.00-54.00

Dead Burned Dolomite

Per net ton

F.o.b. bulk, producing points in: Pa., W. Va., Ohio	$16.75
Missouri Valley	15.60
Midwest	17.00

(Effective May 4, 1959)

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard Q Coated Nails Col	Woven Wire Fence Col	"T" Fence Posts Col	Single Loop Bale Ties Col	Galv. Barbed and Twisted Barbless Wire Col	Merch. Wire Ann'ld ¢/lb.	Merch. Wire Galv. ¢/lb.
Alabama City *R3*	173	187	...	212	193	9.00	9.55
Aliquippa *J3***	173	190	...	...	190	9.00	9.675
Atlanta *A8***	175	192	...	214	198	8.75	9.425
Bartonville *K2***	175	192	178	214	198	9.10	9.775
Buffalo *W6*	.....	.....	.....	.....	.....	9.00	9.55*
Chicago *N4***	177	190	172	212	196	9.00	9.70
Chicago *R3*	.....	.....	.....	.....	.....	9.00	9.55
Cleveland *A6*	.....	.....	.....	.....	.....	.....	.....
Cleveland *A5*	.....	.....	.....	.....	.....	9.00	.....
Crawf'dsv. *M4***	175	192	...	214	198	9.10	9.775
Donora, Pa. *A5*	173	187	...	212	193	9.00	9.55
Duluth *A5*	173	187	...	212	193	9.00	9.55
Fairfield, Ala. *T2*	173	187	...	212	193	9.00	9.55
Galveston *D4*	9.10‡	.....	.....	.....	.....	.....	.....
Houston *S2*	178	192	...	217	198	9.25	9.80†
Jacksonville *M4*	184-1	197	...	219	203	9.10	9.775
Johnstown *B3***	173	190	17‡	...	196	9.00	9.675
Joliet, Ill. *A5*	173	187	...	212	193	9.00	9.55
Kokomo *C9*	175	189	...	214	195*	9.10	9.65*
L. Angeles *B2****	.....	.....	.....	.....	.....	9.95	10.625
Kansas City *S2**	178	192	...	217	198*	9.25	9.80†
Minnequa *C6*	178	192	182	217	198†	9.25	9.80†
Monessen *P6*	.....	.....	.....	.....	193	8.65	9.325
Palmer, Mass. *W6*	.....	.....	.....	.....	.....	9.30	9.85*
Pittsburg, Cal. *C7*	192	210	...	...	213	9.60	10.15
Rankin, Pa. *A5*	173	187	...	...	193	9.00	9.55
So. Chicago *R3*	173	187	...	...	193	8.65	9.20
S. San Fran. *C6*	.....	.....	.....	236	.....	9.95	10.50†
SparrowsPt. *B3***	175	.....	.....	214	198	9.10	9.775
Struthers, O. *Y1**	.....	.....	.....	.....	.....	8.65	9.20
Worcester *A5*	179	.....	.....	.....	.....	9.30	9.85
Williamsport *S5*	.....	.....	.....	.....	.....	.....	.....

* Zinc less than .10¢. *** .10¢ zinc.
** 11-12¢ zinc. † Plus zinc extras.
‡ Wholesalers only.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT 0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Anderson, Ind. *G4*	8.95	10.40	12.60	15.60	18.55
Baltimore, Md. *T8*	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. *W12*	.....	10.70	12.90	16.10	19.30
Boston *T8*	9.50	10.70	12.90	15.90	18.85
Buffalo, N. Y. *R7*	8.95	10.40	12.60	15.60	18.55
Carnegie, Pa. *S9*	8.95	10.40	12.60	15.60	18.55
Cleveland *A5*	8.95	10.40	12.60	15.60	18.55
Dearborn *S1*	9.05	10.50	12.70	.....	.....
Detroit *D1*	9.05	10.50	12.70	15.70	.....
Detroit *D2*	9.05	10.50	12.70	.....	.....
Dover, O. *C4*	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. *M8*	9.05	10.40	12.60	.....	.....
Franklin Park, Ill. *T8*	9.05	10.40	12.60	15.60	18.55
Harrison, N. J. *C11*	.....	.....	12.90	16.10	19.30
Indianapolis *R5*	9.10	10.55	12.60	15.60	18.55
Los Angeles *C1*	11.15	12.60	14.80	17.80	.....
New Britain, Conn. *S7*	9.40	10.70	12.90	15.90	18.85
New Castle, Pa. *B4*	8.95	10.40	12.60	15.60	.....
New Haven, Conn. *D1*	9.40	10.70	12.90	15.90	.....
Pawtucket, R. I. *N7*	9.50	10.70	12.90	15.90	18.85
Riverdale, Ill. *A1*	9.05	10.40	12.60	15.60	18.55
Sharon, Pa. *S1*	8.95	10.40	12.60	15.60	18.55
Trenton, *R4*	.....	10.70	12.90	16.10	19.30
Wallingford *W1*	9.40	10.70	12.90	15.90	18.55
Warren, Ohio *T4*	8.95	10.40	12.60	15.60	18.75
Worcester, Mass. *A5*	9.50	10.70	12.90	15.90	18.85
Youngstown *R5*	9.10	10.55	12.60	15.60	18.55

BOILER TUBES

$/per 100 ft. carload lots cut 10 to 24 ft. F.o.b. Mill	Size OD-In.	Size B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
Babcock & Wilcox	2	13	40.28	47.21	35.22
	2½	12	54.23	63.57	47.43
	3	12	62.62	73.40	54.77
	3½	11	73.11	85.70	63.93
	4	10	97.08	113.80	85.53
National Tube	2	13	40.28	47.21	35.22
	2½	12	54.23	63.57	47.43
	3	12	62.62	73.40	54.77
	3½	11	73.11	85.70	63.93
	4	10	97.08	113.80	85.53
Pittsburgh Steel	2	13	40.28	47.21	.....
	2½	12	54.23	63.57	.....
	3	12	62.62	73.40	.....
	3½	11	73.11	85.70	.....
	4	10	97.08	113.80	.....

METAL POWDERS

Cents per lb, minimum truckload, delivered E. of Miss. River, unless otherwise noted.

Iron Powders

Compacting Powders

Electrolytic, imported, f.o.b.	29.50 to 33.00
Electrolytic, domestic	34.50
Sponge	11.25
Atomized	11.25
Hydrogen Reduced	11.25 to 12.00
Carbonyl	88.00
Welding Powders*	8.10
Cutting and Scarfing Powders*	9.10

Copper Powders

Electrolytic, domestic	41.00
Precipitated	40.50 to 45.00
Atomized	39.80 to 48.30
Hydrogen reduced, f.o.b.	43.25
Bronze	47.20 to 51.50
Chromium, electrolytic	$5.00
Lead	19.00
Manganese, f.o.b.	42.00
Molybdenum	$3.60 to $3.95
Nickel	$1.05 to $1.03
Nickel Silver	53.50
Nickel Steel	13.00
Solder	13¢ plus metal value
Stainless Steel, 302	$1.07
Stainless Steel, 316	$1.26
Steel, atomized, prealloyed, 4600 series	14.00 plus metal value
Tin	14¢ plus metal value
Titanium, 99.25+%, per lb., f.o.b.	$11.25
Tungsten	$3.15 (nominal)

* F.O.B., shipping point.

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

Pct. Discounts

Bolts	1-4 Containers	5 Containers	20,000 Lb.	40,000 Lb.
Machine				
½" and smaller x 3" and shorter	55	57	61	62
⅝" diam. x 3" and shorter	47	49½	54	55
¾" thru 1" diam x 6" and shorter	37	39½	45	46
⅞" thru 1" diam. longer than 6" and 1½" and larger x all lengths	31	34	40	41
Rolled thread, ½" and smaller x 3" and shorter	55	57	61	62
Carriage, lag, plow, tap, blank, step, elevator and fitting up bolts ½" and smaller x 6" and shorter	48	50½	55	56

Note: Add 25 pct for less than container quantity. Distributor prices are 5 pct less on bolts and square nuts.

Nuts, Hex, HP reg. & hvy.

	Full case or Keg price
¾ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½

C. P. Hex, reg. & hvy.

¾ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½

Hot Galv. Hex Nuts (All Types)

¾ in. and smaller	41

Semi-finished Hex Nuts

¾ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½

(Add 25 pct for broken case or keg quantities)

Finished

⅞ in. and smaller	65

Rivets

Base per 100 lb

½ in. and larger	$12.85

Pct. Off List

7/16 in. and smaller	15

Cap Screws

Discount (Packages)

Full Finished H. C. Heat Treat

New std. hex head, packaged	Full Case
⅝" diam. and smaller x 6" and shorter	54 / 42
¾", ⅞", and 1" diam. x 6" and shorter	38 / 23
⅝" diam. and smaller x longer than 6"	.. / ..
¾", ⅞", and 1" diam. x longer than 6"	.. / ..

	C-1018 Steel Full-Finished Cartons	Bulk
¼" through ⅝" dia. x 6" and shorter	59	48
¾" through 1" dia. x 6" and shorter	45	32

Minimum quantity—¼" through ⅜" diam., 15,000 pieces; 7/16" through ⅝" diam., 5,000 pieces; ¾" through 1" diam., 2,000 pieces.

Machine Screws & Stove Bolts

	Discount Mach. Screws	Stove Bolts
Plain Finish Cartons	60	60
Bulk — *Quantity*		
To ¼" diam. incl. — 25,000-and over	60	..
5/16 to ½" diam. incl. — 15,000-200,000	60	..

Machine Screws & Stove Bolt Nuts

	Discount Hex	Square
In Cartons	16	19
In Bulk — *Quantity*		
⅜" diam. & smaller — 25,000-and over	15	16

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, frt allowed in quantity)

Copper	
Rolled elliptical, 18 in. or longer, 5000 lb lots	44.50
Electrodeposited	37.50
Brass, 80-20, ball anodes, 2000 lb or more	47.50
Zinc, ball anodes, 2000 lb lots	18.00
(for elliptical add 1¢ per lb)	
Nickel, 99 pct plus, rolled carton, 5000 lb	1.0225
(Rolled depolarized add 3¢ per lb)	
Cadmium	1.45
Tin, ball anodes $1.05 per lb (approx.).	

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	65.90
Copper sulphate, 100 lb bags, per cwt.	22.75
Nickel salts, single, 100 lb bags	36.00
Nickel chloride, freight allowed, 100 lb	45.00
Sodium cyanide, domestic, f.o.b. N. Y., 200 lb drums	23.70
(Philadelphia price 24.00)	
Zinc cyanide, 100 lb	60.75
Potassium cyanide, 100 lb drum N. Y.	45.50
Chromic acid, flake type, 10,000 lb or more	30.44

CAST IRON WATER PIPE INDEX

Birmingham	125.8
New York	138.5
Chicago	140.9
San Francisco-L. A.	148.6

Dec. 1955, value, Class B or heavier 6 in. or larger, bell and spigot pipe. Explanation: p. 57, Sept. 1, 1955, issue. Source: U. S. Pipe and Foundry Co.

STEEL SERVICE CENTERS

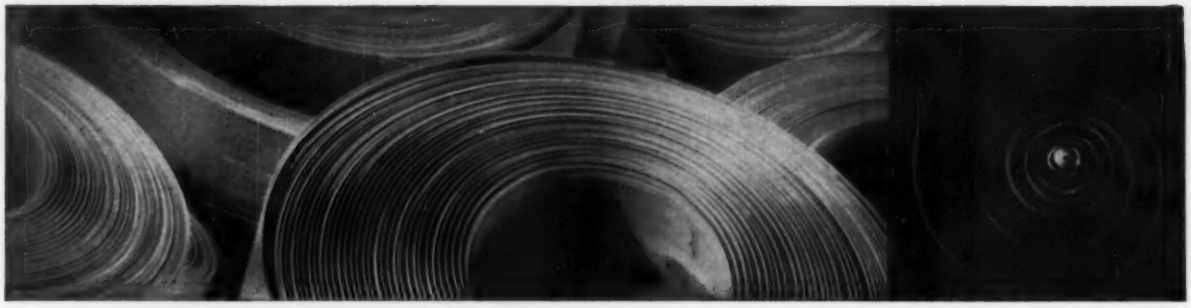
Metropolitan Price, dollars per 100 lb.

Cities	City Delivery‡ Charge	Sheets: Hot-Rolled (18 ga. & hvr.)	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (10 gage)††	Strip: Hot-Rolled	Plates	Shapes: Standard Structural	Bars: Hot-Rolled (merchant)	Bars: Cold-Finished	Alloy Bars: Hot-Rolled 4615 As rolled	Alloy Bars: Hot-Rolled 4140 Annealed	Alloy Bars: Cold-Drawn 4615 As rolled	Alloy Bars: Cold-Drawn 4140 Annealed
Atlanta		8.50	9.87	10.13	8.91	9.29	9.40	9.39	13.24*	.....	.....	.....	.....
Baltimore	$.10	8.65	9.35	9.09	9.15	9.10	9.65	9.55	11.80*	16.28	15.28	19.82	19.08
Birmingham		8.18	9.45	10.46	8.51	8.89	9.00	8.99	.....	.....	.....	.....	.....
Boston	.10	10.22	10.50	12.07	11.27	10.42	10.79	10.34	13.45*	16.79	15.79	20.29	19.54
Buffalo	.15	8.55	9.75	11.00	8.90	9.35	9.40	9.30	11.60*	16.34	15.55	19.01	19.30
Chicago	.15	8.40	9.60	11.05	8.66	9.04	9.15	9.14	9.30	16.20	15.20	19.70	18.95
Cincinnati	.15	8.58	9.65	11.10	8.98	9.42	9.71	9.46	11.68*	16.52	15.52	20.02	19.27
Cleveland	.15	8.51	9.69	11.15	8.78	9.28	9.54	9.25	11.40*	16.31	15.31	19.81	19.06
Denver	.20	9.60	11.84	12.94	9.63	9.96	10.04	10.00	11.19	.....	.....	.....	20.84
Detroit	.15	8.66	9.85	11.40	9.03	9.41	9.71	9.45	9.66	15.46	15.48	18.81	19.23
Houston		8.10	8.60	.....	8.15	8.45	8.05	8.10	11.60	16.20	15.25	19.65	18.95
Kansas City	.15	9.02	10.27	11.37	9.33	9.71	9.82	9.81	10.22	16.87	15.87	20.37	19.62
Los Angeles		8.70[8]	11.20-11.80	12.20	9.15	9.10	9.00	9.10	12.95	17.30	16.35	21.30	20.60
Memphis	.15	8.55	9.80	.....	8.60	8.93	9.01	8.97	12.11*	.....	.....	.....	.....
Milwaukee	.15	8.54	9.73	11.19	8.80	9.18	9.37	9.28	9.54	16.34	15.34	19.84	19.09
New York	.10	9.27	10.59	11.40	9.74	9.87	9.84	10.09	13.35*	16.16	15.60	20.10	19.35
Norfolk	.20	8.20	.....	.....	8.90	8.65	9.20	8.90	10.70	.....	.....	.....	.....
Philadelphia	.10	8.30	9.35	10.71	9.35	9.25	9.20	9.50	12.05*	16.58	15.58	20.08	19.33
Pittsburgh	.15	8.50-8.60	9.70-9.95	11.05	8.76	9.05	9.15	9.14	11.40*	16.20	15.20	19.70	18.95
Portland		10.00[1]	11.75[2]	13.30[3]	11.95[4]	11.50[5]	11.10[6]	9.85[7]	15.30*	18.50	17.45	20.75	20.25
San Francisco	.10	9.75	11.20[9]	11.50	9.85	10.10	9.95	10.25	13.70	17.05	16.35	21.05	20.60
Seattle		10.30	11.55	12.50	10.25	10.10	10.20	10.50	14.70	17.15	16.80	20.65	20.60
Spokane	.15	10.45	11.70	12.65	10.65	10.25	10.35	11.15	14.85	17.75	16.95	21.55	20.75
St. Louis	.15	8.78	9.98	11.43	9.04	9.42	9.63	9.52	9.93	16.58	15.58	20.08	19.33
St. Paul	.15	8.94	10.19	11.64	8.99	9.45	9.53	9.70[7]	10.16	.....	15.41	.....	19.21

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other for quantity. **All sizes except 18 and 16 gage.

†† 10¢ zinc. ‡ Deduct for country delivery. * C1018—1 in. rounds. [1] 10 ga. x 36" x 120"; [2] 20 ga. x 36" x 120"; [3] 26 ga. x 30" x 96"; [4] 4½" x 1" in lots of 1000 to 9999; [5] sheared plate ¼" x 84" in lots of 1000 to 9999; [6] 3" x 5.70" in lots of 1000 to 9999; [7] M-1020—1-in. rounds in lots of 1000 to 9999; [8] 15 ga. & heavier; [9] 14 ga. & lighter.

(Effective May 4, 1959)



Check your requirements against these

Wallace Barnes Cold-rolled Specialty Steels

Furnished in these carbon grades:

1.25 – 1.32% .90 – 1.05% .70 – .80% .59 – .74% .48 – .55%

ANNEALED AND HARD-ROLLED

Thickness

.003 – .010″	in widths	1/8	to 6 1/4″
.011 – .014″	“ “	3/16	to 11″
.015 – .019″	“ “	3/16	to 13″
.020 – .035″	“ “	1/4	to 13″
.036 – .049″	in widths	3/8	to 13″
.050 – .064″	“ “	1/2	to 13″
.065 – .093″	“ “	3/4	to 6 1/4″
.093 – .125″	“ “	3/4	to 6 1/4″

HARDENED AND TEMPERED

Scale-free or scaleless; polished*; polished and blued*; polished and strawed*

Thickness

.003 – .004″	in widths	1/8	to 2″
.005 – .007″	“ “	1/8	to 3″
.008 – .009″	“ “	1/8	to 4″
.010 – .014″	“ “	3/16	to 5″
.015 – .019″	“ “	3/16	to 7″
.020 – .025″	“ “	1/4	to 8 1/2″
.026 – .030″	“ “	1/4	to 8″
.031 – .035″	in widths	1/4	to 7″
.036 – .040″	“ “	3/8	to 7″
.041 – .049″	“ “	3/8	to 6″
.050 – .060″	“ “	1/2	to 4″
.061 – .064″	“ “	1/2	to 3″
.065 – .093″	“ “	3/4	to 3″

*Maximum width for polishing in .010 – .030 thickness ranges is 5 in.

Facilities for processing alloy steels also are available.

Standard sizes normally available for prompt shipments.

Write for a copy of “Physical Property Charts” that give performance characteristics of .90 – 1.05% and .70 – .80% carbon grades.

Wallace Barnes Steel Division

Bristol, Connecticut

Associated Spring Corporation

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. *B6*	68.00	68.50	69.00	69.50	.....
Birmingham *R3*	62.00	62.50*	.....	.....	.....
Birmingham *W9*	62.00	62.50*	66.50	.....	.....
Birmingham *U4*	62.00	62.50*	66.50	.....	.....
Buffalo *R3*	66.00	66.50	67.00	67.50	.....
Buffalo *H1*	66.00	66.50	67.00	67.50	.....
Buffalo *W6*	66.00	66.50	67.00	67.50	.....
Chester *P2*	66.50	67.00	67.50	.....	.....
Chicago *I4*	66.00	66.50	66.50	67.00	.....
Cleveland *A5*	66.00	66.50	66.50	67.00	71.00†
Cleveland *R3*	66.00	66.50	66.50	67.00	.....
Duluth *I4*	66.00	66.50	66.50	67.00	71.00†
Erie *I4*	66.00	66.50	66.50	67.00	71.00†
Everett *M6*	67.50	68.00	68.50	.....	.....
Fontana *K1*	75.00	75.50	.....	.....	.....
Geneva, Utah *C7*	66.00	66.50	.....	.....	.....
Granite City *G2*	67.90	68.40	68.90	.....	.....
Hubbard *Y1*	.....	.....	66.50	.....	.....
Ironton, Utah *C7*	66.00	66.50	.....	.....	.....
Midland *C11*	66.00	.....	.....	.....	.....
Minnequa *C6*	68.00	68.50	69.00	.....	.....
Monessen *P6*	66.00	.....	.....	.....	.....
Neville Is. *P4*	66.00	66.50	66.50	67.00	71.00†
N. Tonawanda *T1*	.....	66.50	67.00	67.50	.....
Sharpsville *S3*	66.00	.....	66.50	67.00	.....
So. Chicago *R3*	66.00	66.50	66.50	67.00	.....
So. Chicago *W8*	66.00	.....	66.50	67.00	.....
Swedeland *A2*	68.00	68.50	69.00	69.50	.....
Toledo *I4*	66.00	66.50	66.50	67.00	.....
Troy, N. Y. *R3*	68.00	68.50	69.00	69.50	73.00
Youngstown *Y1*	.....	.....	66.50	.....	.....

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, $2 per ton for 0.50 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Add $1.00 for 0.31-0.69 pct phos.

Silvery Iron: Buffalo (6 pct), *H1*, $79.25; Jackson *J1*, *I4* (Globe Div.), $78.00; Niagara Falls (15.01-15.50), $101.00; Keokuk (14.01-14.50), $103.50; (15.51-16.00), $106.50. Add $1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 18 pct. Add $1.25 for each 0.50 pct manganese over 1.00 pct. Bessemer silvery pig iron (under .10 pct phos.): $64.00. Add $1.00 premium for all grades silvery to 18 pct.

† Intermediate low phos.

STAINLESS STEEL

Base price cents per lb. f.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingots, reroll.	22.75	24.75	24.00	26.25	—	28.00	41.25	33.50	38.50	—	17.50	—	17.75
Slabs, billets	28.00	31.50	29.00	32.75	33.25	34.50	51.25	41.50	48.25	—	22.25	—	22.50
Billets, forging	—	37.75	38.75	39.50	42.50	42.00	64.50	48.75	57.75	29.25	29.25	29.75	29.75
Bars, struct.	43.50	44.50	46.00	46.75	49.75	49.50	75.75	57.50	67.25	35.00	35.00	35.50	35.50
Plates	39.25	40.00	41.25	42.25	45.00	45.75	71.75	54.75	64.75	30.00	30.00	31.25	31.00
Sheets	48.50	49.25	51.25	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	31.75 48.25	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	44.25	69.25	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	49.25	47.50	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	42.50	40.75
Wire CF; Rod HR	—	42.25	43.50	44.25	47.25	47.00	71.75	54.50	63.75	33.25	33.25	33.75	33.75

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., *C11;* Brackenridge, Pa., *A3;* Butler, Pa., *A7;* Vandergrift, Pa., *U1;* Washington, Pa., *W2, J2;* Baltimore, *E1;* Middletown, O., *A7;* Massillon, O., *R3;* Gary, *U1;* Bridgeville, Pa., *U2;* New Castle, Ind., *I2;* Detroit, *M2;* Louisville, O., *R5.*

Strip: Midland, Pa., *C11;* Waukegan, Cleveland, *A5;* Carnegie, Pa., *S9;* McKeesport, Pa., *F1;* Reading, Pa., *C2;* Washington, Pa., *W2;* W. Leechburg, Pa., *A3;* Bridgeville, Pa., *U2;* Detroit, *M2;* Detroit, *S1;* Canton, Massillon, O., *R3;* Harrison, N. J., *D3;* Youngstown. *R5;* Sharon, Pa., *S1;* Butler, Pa., *A7;* Wallingford, Conn., *U3* (plus further conversion extras); *W1* (25¢ per lb. higher); Seymour, Conn., *S13,* (25¢ per lb. higher); New Bedford, Mass., *R6;* Gary, *U1,* (25¢ per lb. higher).

Bar: Baltimore, *A7;* S. Duquesne, Pa., *U1;* Munhall, Pa., *U1;* Reading, Pa., *C2;* Titusville, Pa., *U2;* Washington, Pa., *J2;* McKeesport, Pa., *U1, F1;* Bridgeville, Pa., *U2;* Dunkirk, N. Y., *A3;* Massillon, O., *R5;* S. Chicago, *U1;* Syracuse, N. Y., *C11;* Watervliet, N. Y., *A3;* Waukegan, *A5;* Canton, O., *T5, R3;* Ft. Wayne, *J4;* Detroit, *R5;* Gary, *U1;* Owensboro, Ky., *G5;* Bridgeport, Conn., *N8;* Ambridge, Pa., *B7.*

Wire: Waukegan, *A5;* Massillon, O., *R3;* McKeesport, Pa., *F1;* Ft. Wayne, *J4;* Newark, N. J. *D2;* Harrison, N. J., *D3;* Baltimore, *A7;* Dunkirk, *A3;* Monessen, *P1;* Syracuse, *C11;* Bridgeville, *U2;* Detroit, *R5.*

Structurals: Baltimore, *A7;* Massillon, O., *R3;* Chicago, Ill., *J4;* Watervliet, N. Y., *A3;* Syracuse, *C11;* S. Chicago, *U1.*

Plates: Ambridge, Pa., *B7;* Baltimore, *E1;* Brackenridge, Pa., *A3;* Chicago, *U1;* Munhall, Pa., *U1;* Midland, Pa., *C11;* New Castle, Ind., *I2;* Middletown, *A7;* Washington, Pa., *J2;* Cleveland, Massillon, *R3;* Coatesville, Pa., *C13;* Vandergrift, Pa., *U1;* Gary, *U1.*

Forging billets: Ambridge, Pa., *B7;* Midland, Pa., *C11;* Baltimore, *A7;* Washington, Pa., *J2;* McKeesport, *F1;* Massillon, Canton, O., *R3;* Watervliet, *A3;* Pittsburgh, Chicago, *U1;* Syracure, *C11,* Detroit, *R5;* Munhall, Pa., S. Chicago, *U1;* Owensboro, Ky., *G5;* Bridgeport, Conn., *N8.*

(Effective May 4, 1959)

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In Canada, Hager Hinge Canada Ltd., Kitchener, Ont.

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Founded 1849, Every Hager Hinge Swings on 100 Years of Experience

CAN YOU USE
A STEEL FABRICATING PLANT
IN LOS ANGELES AREA?

Unique opportunity to acquire all or part of this old established company. Facilities for all code work. Experienced employees. Owner can lease, sell, or accept stock. Brokers Invited.

WRITE OR WIRE

BEN SAMPSON 450 E. COLORADO PASADENA, CALIF.

FERROALLOY PRICES

Ferrochrome

Cents per lb contained Cr, lump, bulk, carloads, del'd. 67-71% Cr, .30-1.00% max. Si.

0.02% C....	41.00	0.50% C....	38.00
0.05% C....	39.00	1.00% C....	37.75
0.10% C....	38.50	1.50% C....	37.50
0.20% C....	38.25	2.00% C....	37.25

4.00-4.50% C, 60-70% Cr, 1-2% Si.. 28.75
3.50-5.00% C, 57-64% Cr, 2.00-4.50% Si 28.25
0.025% C (Simplex) 36.75
8% max C, 50-55% Cr, 6% max Si. 25.75
4½% max C, 50-55% Cr, 2% max Si 26.50

High Nitrogen Ferrochrome

Low-carbon type 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome max. 0.10% C price schedule.

Chromium Metal

Per lb chromium, contained, packed, delivered, ton lots, 97.25% min. Cr, 1% max. Fe.

0.10% max. C	$1.29
9 to 11% C, 88-91% Cr, 0.75% Fe...	1.38

Electrolytic Chromium Metal

Per lb of metal 2" x D plate (⅛" thick) delivered packed, 99.80% min. Cr. (Metallic Base) Fe 0.20 max.

Carloads	$1.15
Ton lots	1.17
Less ton lots	1.19

Low Carbon Ferrochrome Silicon

(Cr 39-41%, Si 42-45%, C 0.05% max.) Carloads, delivered, lump, 3-in. x down, packed.

Price is sum of contained Cr and contained Si.

	Cr	Si
Carloads, bulk	28.25	14.60
Ton lots	33.50	16.05
Less ton lots	35.10	17.70

Calcium-Silicon

Per lb of alloy, lump, delivered, packed. 30-33% Cr, 60-65% Si, 3.00 max. Fe.

Carloads, bulk	24.00
Ton lots	27.95
Less ton lots	29.45

Calcium-Manganese—Silicon

Cents per lb of alloy, lump, delivered, packed.
16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads, bulk	23.00
Ton lots	26.15
Less ton lots	27.15

SMZ

Cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ½ in. x 12 mesh.

Ton lots	21.15
Less ton lots	22.40

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn, packed.

Carload lots	18.45
Ton lots	19.95
Less ton lots	21.20

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed	19.20
Ton lots to carload packed	21.15
Less ton lots	22.40

Ferromanganese

Maximum base price, f.o.b., lump size, base content 74 to 76 pct Mn.

Producing Point	Cents per-lb
Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	12.25
Johnstown, Pa.	12.25
Neville Island, Pa.	12.25
Sheridan, Pa.	12.25
Philo, Ohio	12.25
S. Duquesne	12.25

Add or substract 0.1¢ for each 1 pct Mn above or below base content.

Briquets, delivered, 66 pct Mn:

Carloads, bulk	14.80
Ton lots packed in bags	17.20

Spiegeleisen

Per gross ton, lump, f.o.b. Palmerton, Pa., and Neville Island, Pa.

Manganese	Silicon	
16 to 19%	3% max.	$100.50
19 to 21%	3% max.	102.50
21 to 23%	3% max.	105.00

Manganese Metal

2 in. x down, cents per pound of metal delivered.

95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.

Carload, packed	45.75
Ton lots	47.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.

Carloads	34.00
Ton lots	36.00
250 to 1999 lb	38.00
Premium for Hydrogen - removed metal	0.75

Medium Carbon Ferromanganese

Mn 80 to 85%, C 1.25 to 1.50, Si 1.50% max., carloads, lump, bulk, delivered, per lb of contained Mn 25.50

Low-Carb Ferromanganese

Cents per pound Mn contained, lump size, packed, del'd Mn 85-90%.

	Carloads	Ton	Less
0.07% max. C, 0.06% P, 90% Mn	(Bulk) 37.15	39.95	41.15
0.07% max. C	35.10	37.90	39.10
0.10% max. C	34.35	37.15	38.35
0.15% max. C	33.60	36.40	37.60
0.30% max. C	32.10	34.90	36.10
0.50% max. C	31.60	34.40	35.60
0.75% max. C, 80.85% Mn, 5.0-7.0% Si ...	28.60	31.40	32.60

Silicomanganese

Lump size, cents per pound of metal, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢ f.o.b. shipping point.

Carloads bulk	12.80
Ton lots, packed	14.45
Carloads, bulk, delivered, per lb of briquet	15.10
Briquets, packed pallets, 3000 lb up to carloads	16.30

Silvery Iron (electric furnace)

Si 15.50 to 16.00 pct., f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $106.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $93.00.

Silicon Metal

Cents per pound contained Si, lump size, delivered, packed.

	Ton lots,	Carloads,
98.25% Si, 0.50% Fe..	24.95	23.65
98% Si, 1.0% Fe	24.45	23.15

Silicon Briquets

Cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si, briquets.

Carloads, bulk	8.00
Ton lots, packed	10.80

Electric Ferrosilicon

Cents per lb contained Si, lump, bulk, carloads, f.o.b. shipping point.

50% Si....	14.60	75% Si....	16.90
65% Si....	15.75	85% Si....	18.60
	90% Si....	20.00	

Ferrovanadium

50-55% V delivered, per pound, contained V, in any quantity.

Openhearth	3.20
Crucible	3.30
High speed steel	3.40

Calcium Metal

Eastern zone, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
100 to 1999 lb..	2.40	3.30	4.55

(Effective May 4, 1959)

Alsifer, 20% Al, 40% Si, 40% Fe, f.o.b. Suspension Bridge, N. Y., per lb.

Carloads, bulk	9.85¢
Ton lots	11.20¢

Calcium molybdate, 43.6-46.6% f.o.b. Langeloth, Pa., per pound contained Mo $1.50

Ferrocolumbium, 50-60% lb, 2 in. x D, delivered per pound contained Cb.

Ton lots	$3.90
Less ton lots.....	3.95

Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, del'd ton lots, 2-in. x D per lb con't Cb plus Ta $3.40

Ferromolybdenum, 55-75%, 200-lb containers, f.o.b. Langeloth, Pa., per pound contained Mo.. $1.76

Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $5.00 unitage, per gross ton $120.00
10 tons to less carload $131.00

Ferrotitanium, 40% regular grade 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti $1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti $1.50
Less ton lots $1.54

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton $240.00

Ferrotungsten, ¼ x down packed, per pounds contained W, ton lots delivered ..... $2.15 (nominal)

Molybdic oxide, briquets per lb contained Mo, f.o.b. Langeloth, Pa. $1.49
bags, f.o.b. Washington, Pa., Langeloth, Pa. $1.38

Simanal, 20% Si, 20% Mn, 20% Al, f.o.b. Philo, Ohio, freight allowed per lb.

Carload, bulk lump	18.50¢
Ton lots, packed lump	20.50¢
Less ton lots	21.00¢

Vanadium oxide, 86-89% V_2O_5 per pound contained V_2O_5 .... $1.38

Zirconium silicon, per lb of alloy 35-40% del'd, carloads, bulk.. 26.25¢
12-15%, del'd lump, bulk-carloads ..... 9.25¢

Boron Agents

Borosil, per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B
2000 lb carload $5.50

Bortram, f.o.b. Niagara Falls.
Ton lots per pound ..... 45¢
Less ton lots, per pound ..... 50¢

Corbortam, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4-5-7.5%, f.o.b., Suspension Bridge, N. Y., freight allowed.
Ton lots per pound ..... 14.00¢

Ferroboron, 17.50 min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, ton lots.. $1.20
F.o.b. Wash., Pa., Niagara Falls, N. Y., delivered 100 lb up

10 to 14% B	.85
14 to 19%	1.20
19% min. B	1.50

Grainal, f.o.b. Cambridge, O., freight allowed, 100 lb and over

No. 1	$1.05
No. 79	50¢

Manganese-Boron, 75.00% Mn, 17.50% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.

Ton lots (packed)	$1.46
Less ton lots (packed)	1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd less ton lots 2.15

ELECTRICAL POWER EQUIPMENT IN STOCK

DC MOTORS

Qu.	H.P.	Make	Type	Volts	RPM
1	3900	New Elliott	Enc. F.V.	475	320
1	3000	New Whse.	Enc. F.V.	525	600
1	2250	New Elliott	Enc. F.V.	600	200/300
1	2200	G.E.	MCF	600	400/500
1	1750	New Elliott	Enc. F.V.	250	175/350
8	1500	New Whse.	Enc. F.V.	525	600
1	1300	G.E.	MCF-12	300	200/400
1	1200	G.E.	MCF	600	450/600
1	1000	Whse.		560	800/2000
1	940	Whse.	QM	250	140/170
2	940	S.S.	Enc. F.V.	600	800/1000
2	800	G.E.	MCF	250	400/750
3	765	Allis Ch.	MHC	550	1012/1350
2	750	G.E.	MCF	600	450/900
1	750	G.E.	MCF	600	300/720
1	750	G.E.	M.F.	600	120/360
4	600	Whse.		250	275/550
1	500	G.E.	MPC-10	250	188/400
2	450	Whse.		550	415
2	400	G.E.	CY-275	300	1000/1500
3	325	Allis Ch.	MHC	250	450/900
1	300	Cr. Wh.	H-102 B.B.	230	1200
1	225	G.E.B.B.		250	1150/3600
1	200	Rel. B.B.	T-664-D.P.	240	850
1	200	Whse.	CB-207-4	250	850/1200
1	150	Cr.Wh.	CMC-65H	230	1150
1	150	G.E.B.B.	TLC-74	250	1150/3500
1	150	G.E.B.B.	CD	600	250/750
1	120	G.E.B.B.	TLC-50	250	1950/5000
1	125/250	New Whse.	CB-210.3	230	300/1200
1	120	Rel. B.B.	1050T	230	575/900
2	125	Whse.	SK-190	230	450/1200
1	125	Whse.	SK-185	230	350/1050
1	100	G.E.	CDP-145	230	1750
1	80	Whse.	SK-123.9	240	2000/4500
1	75	G.E.B.B.	CD-1235-D.P.	600	850
1	60/75	Rel. B.B.	T-664-D.P.	240	300/1200
1	30/40	Whse. B.B.	SK-131, TEFC	250	500/1500
1	25/33	Rel. B.B.	TY563	240	300/1200
6	40	Rel. B.B.	283F. TEFC	230	500/1500
1	30/40	Rel. B.B.	T-564-D.P.	240	300/900

MERCURY ARC RECTIFIERS

3—150 KW, G.E., Sealed Tube Ignitron Unit Substation load centers 275 V. D.C., 2300 V. A.C. Pyranol filled transformers complete.
2—150 KW, G.E., Ignitron, 245 V. D.C.—230 V. A.C., air cooler transformers with controls.

MG SETS—3 Ph. 60 Cy.

Qu.	K.W.	Make	RPM	DC Volts	AC Volts
1	2000	G.E.	514	600	2300/4600
2	1750/2100	G.E.	514	250/300	2300/4600
1	1750	G.E.	514	600	2300/4600
1	1500	G.E.	720	600	6600/13200
1	1500	Cr.Wh. 4 unit	720	100	2300
1	500	G.E.	900	125/250	440
1	350	G.E.	900	125	440/2300/4160
1	300	G.E.	1200	250	2300/4000
1	300	G.E.	1200	250	440/2300
1	250	G.E.	900	250	440/2300
1	240	Whse.	900	125	250/440
1	200	Whse.	1200	550	2200
1	200	El.Mhy	1200	250	2300/4600
1	150	G.E.	1200	275	2300
1	150	Whse.	1200	275	2300
1	150	G.E.	1200	125	440
1	140	Cr.Wh.	690	125/250	2300
1	100	G.E.	1170	250	220/440
1	100	Cr.Wh.	1800	240	440
2	100	Cr.Wh.	1160	525	220/550
1	100	G.E.	1200	250	2400/4100
2	75	Whse.	1200	125	440

TRANSFORMERS

Qu.	KVA	Make	Type	Ph.	Voltages
3	3333	Whse.	OISC	1	13800 x 2300
3	1000	G.E.	CA/FA	1	13800 x 230/460
2	750	G.E.	Pyranol	1	4800x85/55-255/165
3	500	Kuhl	OISC	1	13200 x 6600
6	333	G.E.	HS	1	7200/12470YX 2400/4160Y
3	333	G.E.	OISC	3	2400/4160YX600
3	150	G.E.	OISC	1	3300x2300/4000Y
3	100	G.E.	HS	1	4800/8320Y x 120/240
1	50	Mel.	OISC	3	13200 x 240-480
3	50	Al.Ch.			2400 x 120/240

CRANE & MILL MOTORS
230 V., D. C.

Qu.	H.P.	Make	RPM	Type
13	12/14	Whse.	700/600	MCA-30, Series
1	20	Whse.	975	K-5 Series
2	23	G.E.	650	MDS-408
2	25	G.E.	725	CO-1808, Series
1	35	Whse.	490	CK-9 Comp. S.B.
1	35	Whse.	480	CK-9 Sh. R.B.
1	45	Whse.	660	CK-9 Comp. S.B.
3	50	G.E.	650	COM-1830 Comp.
3	50	Whse.	525	CK-9 Shunt R.B.
3	50	Whse.	600	CK-9 Comp. R.B.
1	50	G.E.	525	COM-1830AEB.B.
1	50	Cr.Wh.	550	SW-50 Comp.
1	100	G.E.	475	CO-1832 S.B.
6	100/140	Whse.	500/415	MC-90 R.B.

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Philadelphia Sales Bring Little Profit

Used machinery dealers in Delaware Valley area are moving a good amount of equipment.

But often the profit margin is mighty slim.

Like a broken record, Philadelphia area used machinery dealers all repeat the same theme: Equipment is selling, but profits are poor.

"We're operating on such close margins," one dealer says, "a $500 profit looks good."

"Sometimes you feel like a cashier," another comments. "You sell one piece of equipment, buy another, and haven't done much except trade dollars."

"We're re-selling machines we bought two years ago, at prices equal or lower than those we paid," a third adds. "And sometimes we're glad to get rid of them."

The dealers report profit margins of 5 pct or even less are common. Prices are still depressed despite improved business.

"Recently we conducted a plant auction where the equipment brought in about $45,000," says a dealer. "Even last year this sale would have totaled close to $60,000."

In addition, much of the current selling is on a credit basis. "About 40 pct of our present sales require credit negotiations," one seller complains.

This and the poor price level make selling difficult. Plenty of leg work and lots of endurance are needed to get orders. With the buyers knowing they are in the driver's seat, dealers are throwing in extras like rigging to close sales.

"We're using every sales trick in the books to land orders," moans one dealer. Another says, "There are no easy sales any more. You've got to stay right with a prospect until he makes up his mind. We're working hard for every order we get."

Most Delaware Valley dealers agree the market has improved a lot since its recession slump. They know their customers are busier, more interested in buying or replacing equipment.

A company specializing in toolroom items reports first quarter sales equaled those of the whole first half last year. Right now toolroom and production equipment are in good demand. Boring mills, lathes, shapers, and grinders are among the units moving well.

Sales have been made as far west as California, where users wanted—and got—vertical boring mills.

What about the outlook for the balance of '59? One dealer sums it up this way: "There's no doubt business has snapped back. Shops definitely have more orders, are rehiring laid-off men. Personally, I feel more confident about buying equipment for re-sale than I have at any time since 1957."

Coming Auction

A sale of heavy machine tools, toolroom and production machinery valued at $500,000 will take place on May 12 at the plant of George F. Motter's Sons, Pershing St., York, Pa.

CONSIDER GOOD USED EQUIPMENT FIRST

BENDING ROLLS
10' x 10 Ga. Bertsch No. 6 Initial Type
14' x 1 3/16" Bertsch Initial Type—LATE
32' x ¾" BALDWIN PYRAMID TYPE—LATE
BRAKE—LEAF TYPE
12' x ⅛" Dreis & Krump
BRAKES—PRESS TYPE
90 ton Niagara. Model 90-8-10
10' x ⅛" Dreis & Krump
CRANES—OVERHEAD ELECTRIC TRAVELING

3 ton P&H	40' Span 220 Volt D.C.
5 ton P&H	57' Span 220/3/60 A.C.
8 ton P&H	55' Span 230/3/60
10 ton P&H	39' Span 230 Volt D.C.
10 ton Milwaukee	57' Span 230 Volt D.C.
10 ton Shaw	48' Span 230 Volt D.C.
10 ton Whiting	75' Span 220/3/60 A.C.
10 ton Shaw	120' Span 230 Volt D.C.
15 ton N-B-P	100' Span 220/3/60 A.C.
30 ton Shaw	70' Span 230 Volt D.C.
120 ton Niles	67' Span 230 Volt D.C.
120 ton Shepard Niles	77' Span 220/3/60 A.C.

CRANES—TRAMRAIL TRAVELING
56 ft. Bridge, Three 215 ft. Runways
82 ft. Bridge, Four Runways 215' & 135'
Motors 208 Volt 3 Phase 60 Cycle
DRAW BENCHES
7,000 lb. Draw Bench, 51 ft. Draw
10,000 lb. Draw Bench, 50 ft. Draw
35,000 lb. Draw Bench, 41 ft. Draw
FORGING MACHINES
1" to 5" Acme, Ajax, National
HAMMERS—BOARD DROP—STEAM DROP—STEAM FORGING 800 lb. to 12,000 lb. incl.
LEVELERS—ROLLER
50" Processor & Leveler, Capacity 50" x .100"
66" Guide 17 Rolls 4¼" Dia.
72" Leveler 17 rolls 2⅝" Backed Up
MULTI SLIDE MACHINE
No. 35 U.S. Multi-Slide, Max. Capy. 4¼" wide x .089
NIBBLER
Pullmax Model 2. Capacity 11/32"
PRESSES—HYDRAULIC
500 ton Watson Stillman Piercing Press, 48" x 72"
500 ton HPM Fastraverse, Bed 36" x 36"
600 ton Birdsboro, Platen 48 x 48", Stroke 15"
1000 ton Southwark, Bed 44" x 54", Stroke 20"
4500 ton B-L-H Bed 68 x 68", Stroke 40'
PRESSES—STRAIGHT SIDE
215 ton Clearing, Bed Area 36 x 42", Stroke 24"
900 ton Hamilton 4E-1809, Bed 101x181", Stroke 30"
PUNCH & SHEAR COMBINATIONS
#1½ Buffalo Universal Ironworker
FF Cleveland 60" Throat Capacity 1¼" x 1"
#8 Kiling, 36" Throat Capacity 1-⅜" x 1"
Rock River Double End. 24" Throat. Capy. 1¼" x 1"
ROLLING MILLS
3½" x 7" Six Roll Cluster Mill
10" x 14" Single Stand Two High
13" x 16" Single Stand Two High
16" x 24" Two Stand Two High
20" x 36" Single Stand Two High
26" x 60" Single Stand Two High
10" Morgan Merchant Mill
12" x 32" Birdsboro 3-Hi Bar Mill
22" x 40" Lewis 3-Hi Sheet Mill.
ROLLS—FORMING
6 Stand Dahlstrom #450-6 for stock to 4½" wide
18 Stand Custom Built, 2½ Shaft, will take 36" wide
ROLL—PLATE STRAIGHTENING
72" McKay, 20 Rolls 15" Dia. Infeed & Outfeed Rolls, 150 H.P. Main Drive Motor
SAW
Model 122-BA Ty-Sa-Man, Capacity 8 Cuts 2" Deep at one time 15" wide, 16 ft. long
SCALPING OR BILLET PEELING MACHINE
Medart #6 Size HFBP, Capacity 3½" to 5" incl.
SHEARS MISC.
36" Halden Drum Type, Capy. 33-38 Ga.
60" x 10 Ga. Cut-Off Line
96" x 14 Ga. Cut-Off Line
Striene Sheet Mill Pack Shear. Shear packs up to ¼" thick, 20 to 62" wide, 54 to 160" long
SHEAR—ROTARY
No. 23A Quickwork Whiting 3/16" Capacity
SHEARS—SQUARING
6' x 14 Ga. Edwards, Motor Drive—LATE
10' x 10 Ga. Wysong & Miles
10' x ¼" Niagara #810
12' x 3/16" Cincinnati #1412
SLITTER
24" Torrington Slitting Line, 3½" Arbor
STRAIGHTENERS
Torrington #1734 12-Roll, Capy. 1¾", Rd. 1-9/16"
¾" Shuster Straightener, 12 Ft. Cut-off
#1 Sutton 5-Roll, Capy. to 3¾" tube, 2¼" solid
SWAGING MACHINE
#6A Fenn, Capy. 3¾" Tube, 1¼" Solid, 10" Die Length. With Hydraulic Feed
TESTING MACHINES
20,000 lb. Baldwin Univ. Hydraulic
50,000 lb. Olsen 3-Screw Beam Type Universal
60,000 lb. Southwark-Emery Universal Hydraulic
500,000 lb. Olsen, Super DeLuxe Compression
WIRE DRAWING MACHINES
Type B Morgan 4-Block Capy. #5' Rod down
Scudder 3-Block 20 Dia.
Superior 7-Draft Cone Type Capy. 14 Ga. down
Vaughn 5 Block, Ea. block M.D. capy. # down

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FOR SALE

1—Used Complete Pickle Line, 48" wide capacity consisting of uncoiler, scale breaker, leveler, water tank, pickle tank, wash tank, 5 pinch rolls, Hoffman dryer, upcoiler, conveyor, motor-generator set and all electrical and accessories.
1—Steel frame Building unit consisting of: one aisle 73' wide x 594' long with 120 ton crane runway; with common columns to an aisle 33' wide x 594' long with 10 ton crane runway; with common columns to an aisle 58' wide x 594' long, no crane runway. Two cranes included.
1—Steel Frame Building, 42'6" wide x 154' long, with 10 ton crane runway, 29' floor to bottom chord, crane rail 20' from floor.

Large Lathes — Forging Presses

14,000 T Mesta Steam Hyd. Forging Press, 1942.
5,000 T Mesta Self Cont'd. Oil Hyd. Forging Press, New '42. Used 1 year.
3,000 T United Eng. Steam Hyd. Forging Press, 1943.
NILES BORING LATHE 96" x 42' CC. Replacement cost $300,000. FOB Trucks $39,950.
LANDIS NILES 14' x 28' CC Cyl. Grinder. New '52.
3250 TON MESTA FORG. PRESS—New '55. Like new.
#2, 3, 5, Long & Alstatter Dble. End Punch & Shears.
106" x 1½" Long & Alstatter Plate Shear, Running.
7" Round Pels Guillotine Billet Bar Shear.
EVEREADY—BPT., CONN.—Box 638,—ED. 4-9471-2

FOR SALE

FLAT STITCHING WIRE
25000# Continental — .011 x .103 x Coil (Brite)
15000# Acme — .011 x .103 x Coil (Gal.)
8# to 10# Coils per 100# Box
New & Prime — Write for samples
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18"x49" centers Lodge & Shipley, m.d.
18"x51" centers American Geared Head, m.d.
18"x51" centers Hendey Geared Head, m.d., taper
18"x54" centers American, m.d., Timken
18"x60" centers Cincinnati Tray Top, m.d.
18"x106" centers (110" centers tailstock overhang) American, m.d.
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20'x96" centers Boye & Emmes, Model C., m.d., new
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3½" Rd	DC-33	18,300#
3½" Rd	Hot Form #1	12,800#
3½" Rd	Fire Die	1,200#
1⅛" Rd CG	Carpenter #883	15,650#
8½" x 8½"	Halcomb #218	36,450#

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Size	Trade Name	Weight
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5" Rd	Leco	5,900#
4¼" Rd	"CFS"	6,100#
4⅛" Rd	Crucible Dbl. Spec.	14,700#
3" Rd	Carp. "K.W."	24,000#
.655 Rd	AMS 5132	16,000#
1¾" x 1"	Silver Star	33,300#
1½" x 1"	Silver Star	1,700#

OIL HARDENING

Size	Trade Name	Weight
4" Rd	Vibro	31,000#
1¾" x 2"	"711"	6,000#
⅞" Rd	"711"	12,500#
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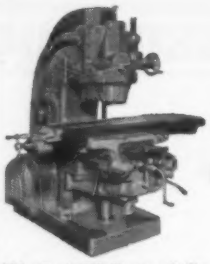

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GRINDER, SURFACE, 12"x16"x36" Mattison, 1942
KELLER, Model BL2418 P & W, 3 spdl., 1941
LATHE, 90" swing Betts Bridgeford headstock, 1943
LATHE, TURRET, #4L Gisholt, cross sl. tur., 1940
MILL, #5H Kearney & Trecker, pl. vert. hd., 1941
MILL, 42"x42"x18" Ingersoll adj. rail, planer type
PLANER, 66" Rockford, hydr., openside, 1941
PRESS, COINING, 400 ton #663 Toledo, knuckle
PRESS, COINING, 600 ton #664 Toledo, knuckle
PRESS, COINING, 1000 ton Clearing, air cl., knuckle, 1942
PRESS, HI-PROD., 27 ton #620 Bliss
PRESS, HI-PROD., 65 ton #645 Bliss
PRESS, HI-PROD., 110 ton #675B Bliss
PRESS, PUNCHING, 70 ton #P5 Ferracute
PRESS, HORNING, 71 ton #10-7 Minster
PRESS, HORNING, 90 ton #75 Bliss Cons.
PRESS, HYDR., 100 ton HPM Hydro-Power
PRESS, HYDR., 150 ton HPM "Fastraverse," 1949
PRESS, HYDR., 350 ton Elmes, high speed, 1946
PRESS, S.S., 370 ton #18S Cleveland
PRESS, S.S., 800 ton 2E-48-800 Hamilton, air cl., 1947
PRESS, OBI, 60 ton #6 Toledo
ROLLS, #18 Kane & Roach straightening, 2½" bars
SLOTTER, 36" Rockford, vert. hydr., 1943
SAW, 10½" x 10½" #3 Metch & Merryweather, 1941
SAW, 18" x 10" Racine hydr., hack, 1941
SAW, 30" Laidlaw metal cutting, band, 1941
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2	1250	Whse.	720	600	4160/2400
1	1250	G.E.	450	250	4160/2400
2	1000	Whse.	720	600	4160/2400
3	500	Whse.	1200	125/250	4000/2300
1	450	Whse.	900	280/300	2300
3	300	Whse.	1200	125/250	4000/2300
1*	300	Al.Ch.	1200	250/300	2300
3	200	Whse.	1200	125/250	2300
1	150	Whse.	1200	250	2300
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8**	1500	Whse.	Rev.	525	600
1**	1250	Al.Ch.	Mill	600	300/600
2**	940	S.S.	Mill	600	800/1000
1**	700	Whse.	Mill	600	143
4**	700	Whse.	Rev.	250	300/700
2**	645	S.S.	Mill	300	1000
1	600	Whse.	Mill	250	110/220
2	600	Al.Ch.	Mill	600	300/600
1	400	G.E.	M.P.C.	270	450
1	300	Whse.	Mill	230	300
2	275	Whse.	Q.M.660.6	250	425/850
1	175	G.E.	C.D.175-A	245	800/1025
1	125	Whse.	SK-184	230	575/850
1	125	Whse.	SK-190	230	450/1000
1	100	Rel.	461-T	250	1150/1500
1	100	Whse.	SK-183	230	450/1000
1	100	G.E.	CD-175	230	400/1200
1	80	Rel.	651-T	230	575/1150
1	80	El.Dy.	25-S	230	525/1050
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.234"/.238"	C.D.	16500#
.257"	C.D. C.G.	5500#
.629"/.643"	HR x Coil	8800#
.715"/.731"	HR x Coil	1200#
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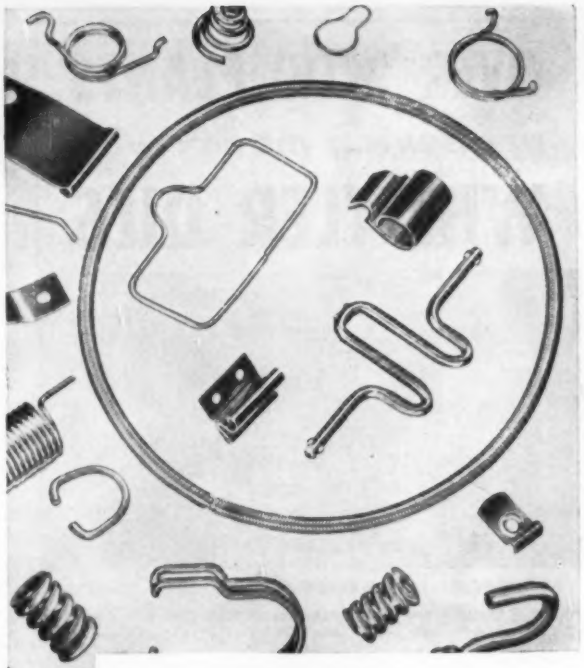

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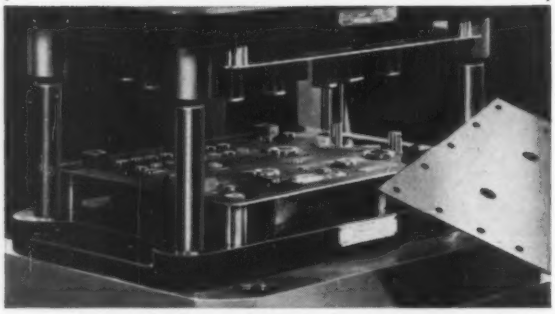

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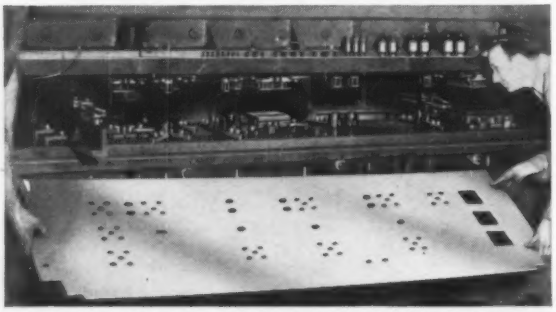

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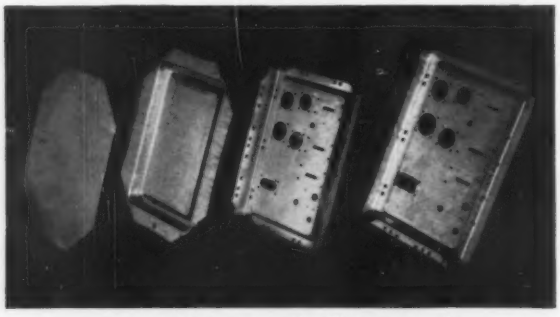

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